DRAFT

ECONOMIC ANALYSIS OF CRITICAL HABITAT DESIGNATION FOR THE NORTHERN GREAT PLAINS BREEDING POPULATION OF THE PIPING PLOVER

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PREFACE

The U.S. Fish and Wildlife Service states that:

"The standard best practice in economic analysis is applying an approach that measures costs, benefits, and other impacts arising from a regulatory action against a baseline scenario of the world without the regulation. Guidelines on economic analysis, developed in accordance with the recommendations set forth in Executive Order 12866 ("Regulatory Planning and Review"), for both the Office of Management and Budget and the Department of the Interior, note the appropriateness of the approach:

> *'The baseline is the state of the world that would exist without the proposed action. All costs and benefits that are included in the analysis should be incremental with respect to this baseline.'*

"When viewed in this way the economic impacts of critical habitat designation involve evaluating the 'without critical habitat' baseline versus the 'with critical habitat' scenario. Impacts of a designation equal the difference, or the increment, between these two scenarios. Measured differences between the baseline and the scenario in which critical habitat is designated may include (but are not limited to) changes in land use, environmental quality, property values, or time and effort expended on consultations and other activities by federal landowners, federal action agencies, and in some instances, State and local governments and/or private third parties. Incremental changes may be either positive (benefits) or negative (costs).

"In New Mexico Cattle Growers Ass'n v. U.S.F.W.S., 248 F.3d 1277 (10th Cir. 2001), however, the 10th Circuit recently held that the baseline approach to economic analysis of critical habitat designations that was used by the Service for the southwestern willow flycatcher designation was 'not in accord with the language or intent of the ESA.' In particular, the court was concerned that the Service had failed to analyze any economic impact that would result from the designation, because it took the position in the economic analysis that there was no economic impact from critical habitat that was incremental to, rather than merely co-extensive with, the economic impact of listing the species. The Service had therefore assigned all of the possible impacts of designation to the listing of the species, without acknowledging any uncertainty in this conclusion or considering such potential impacts as transaction costs, reinitiations, or indirect costs. The court rejected the baseline approach incorporated in that designation, concluding that, by obviating the need to perform any analysis of economic impacts, such an approach rendered the economic analysis requirement meaningless: 'The statutory language is plain in requiring some kind of consideration of economic impact in the CHD phase.'

"In this analysis, the Service addresses the 10th Circuit's concern that we give meaning to the ESA's requirement of considering the economic impacts of designation by acknowledging the uncertainty of assigning certain post-designation economic impacts (particularly section 7 consultations) as having resulted from either the listing or the designation. The Service believes that for many species the designation of critical habitat has a relatively small economic impact, particularly in areas where consultations have been ongoing with respect to

the species. This is because the majority of the consultations and associated project modifications, if any, already consider habitat impacts and as a result, the process is not likely to change due to the designation of critical habitat. Nevertheless, we recognize that the history of consultations on critical habitat is not broad, and there may be substantial uncertainties in any analysis. We also understand that the public wants to know more about the kinds of costs consultations impose and frequently believe that designation could require additional project modifications.

"Therefore, this analysis incorporates two baselines. One addresses the impacts of critical habitat designation that may be 'attributable co-extensively' to the listing of the species. Because the Service has little historical information about the benefits and economic costs of impacts resulting from critical habitat designations, we believe it is reasonable to estimate the upper bounds of the cost of project modifications based on the benefits and economic costs of project modifications that would be required due to consultation under the jeopardy standard. It is important to note that the inclusion of impacts attributable co-extensively to the listing does not convert the economic analysis into a tool to be considered in the context of a listing decision. As the court reaffirmed in the southwestern willow flycatcher decision, 'the ESA clearly bars economic considerations from having a seat at the table when the listing determination is being made.'

"The other baseline, the lower boundary baseline, will be a more traditional rulemaking baseline. It will attempt to provide the Service's best analysis of which of the effects of future consultations actually result from the regulatory action under review - ie. the critical habitat designation. These costs will in most cases be the costs of additional consultations, reinitiated consultations, and additional project modifications that would not have been required under the jeopardy standard alone as well as costs resulting from uncertainty and perceptional impacts on markets."

December 3, 2001

EXECUTIVE SUMMARY

1. The primary purpose of this report is to identify and analyze the economic impacts that would result from the proposed critical habitat designation for northern Great Plains population of the piping plover (*Charadrius melodus*). This report was prepared by Bioeconomics, Inc. under sub-contract to Industrial Economics, Incorporated (IEc), for the U.S. Fish and Wildlife Service's (the Service) Division of Economics.

2. Consistent with the May 11, 2001 ruling of the U.S. Court of Appeals of the Tenth Circuit, this report also provides estimates of the numbers of, and costs associated with, all future consultations involving the northern Great Plains population of the piping plover, including those associated only with the listed status of the species.

3. Section 4(b)(2) of the Endangered Species Act (the Act) requires the Service to designate critical habitat on the basis of the best scientific and commercial data available, after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. The Service may exclude areas from critical habitat designation when the benefits of exclusion outweigh the benefits of including the areas within critical habitat, provided the exclusion will not result in extinction of the species.

Proposed Critical Habitat

4. The Service has proposed critical habitat designation for the Great Plains population of the piping plover on approximately 196,577 acres of land and water bodies and 1,338 miles of river in five States. Approximately 137,407 acres (70 percent of the total acreage proposed) are located on Federally-owned or managed lands; 696 acres (less than one percent) are State or local government lands; and the remaining 54,254 acres (28 percent) are located on private lands.[1] In addition, of the 1,338 miles of river included in the proposed designation, approximately 568 miles (42 percent) are recognized as Federally-owned; 320 miles (24 percent) are owned by State or local government; and 450 miles (34 percent) are privately owned. Approximately 82 miles (less than one percent) of these riverine reaches in Montana border tribal lands. Exhibit ES-1 provides a summary of land ownership and approximate acreage or river miles of proposed critical habitat for each habitat type.

[1] Detail may not add to 100 percent due to rounding.

Exhibit ES-1
PROPOSED CRITICAL HABITAT UNITS FOR THE PIPING PLOVER IN HABITAT TYPES SUMMARIZED BY OWNERSHIP

	Ownership				
	Federal (% of total)	**State (% of total)**	**Tribal (% of total)**	**Private (% of total)**	**Total**
Area of land, large reservoirs, and lakes (expressed in acres)					
Prairie alkali lakes and wetlands (Montana, North Dakota)	53,400.6 (48%)	4,680.9 (4%)	0	54,253.5 (48%)	112,335
Inland lakes (Minnesota)	0	235.2 (100%)	0	0	235.2
Nelson Reservoir, Fort Peck Reservoir, and Bowdoin National Wildlife Refuge (lake) (Montana)	84,006.2 (100%)	0	0	0	84,006.2
Riverine and reservoir reaches (expressed in miles)					
Niobrara, Loup, and Platte Rivers (Nebraska)	0	13 (2.8%)	0	450 (97.2%)	463
Missouri River[1] (Montana, North Dakota, South Dakota, Nebraska)	567.7 (64.9%)	307.3 (53.1%)	81.7[2] (0.1%)	0	875[2]

1. Ownership of sites along the Missouri River varies by State. The Federal government owns the reservoir shorelines below the maximum operating pool. In Montana, islands and sandbars are recognized as owned by the State except along the reservation boundaries of the Assiniboine and Sioux Tribes of Fort Peck. The Assiniboine and Sioux Tribes of Fort Peck own land to the mid-channel of the Missouri River adjacent to the Reservation boundary. In North Dakota and South Dakota, islands and sandbars are recognized as owned by the State. However, there are some exceptions where adjacent landowners in South Dakota actually have deeds to land under the Missouri River where sandbars can form. Additionally, the Fort Laramie Treaty of 1868 recognizes the Missouri River's east bank as the boundary of the Great Sioux Reservation. Thus, the Tribes along the Missouri River recognize their boundaries as the boundaries identified in the Fort Laramie Treaty. In Nebraska, islands and sandbars are owned by the adjacent landowner. Fort Laramie Treaty provisions also apply to tribes in Nebraska that were a part of the Great Sioux Nation.
2. 81.7 miles of the Missouri River are shared by the State of Montana and Reservation land. Therefore, the percentages do not total 100, and the overall miles of river (875) is correct.

Economic Impacts Considered

5. This analysis quantifies, to the extent possible, the effects of section 7 in its entirety on current and planned activities that are reasonably expected to occur over the next ten years within proposed critical habitat. Subsequently, the analysis identifies whether these effects are associated with the jeopardy provisions of section 7 or the critical habitat provisions of that section. The approach to baseline definition employed in this analysis is consistent with that of previous analyses, in that the goal of economic impact assessment is to understand the marginal effects of a government action. Typical economic analyses concentrate mostly on identifying and measuring, to the extent feasible, economic effects most likely to occur because of the action being considered. Baseline conditions, while identified and discussed, are rarely characterized or measured in any detailed manner because by definition, these conditions remain unaffected by the outcome of the decision being contemplated.

6. While the goal of this analysis remains the same as previous critical habitat economic analyses (i.e., to identify and measure the estimated marginal effects of the proposed rulemaking), we also present more detailed information on baseline conditions than that presented in previous studies.

7. This analysis defines an impact of critical habitat designation to include any effect designation has above and beyond the impacts associated with the listing of the piping plover. Section 9 of the Act makes it illegal for any person to "take" a listed species, which is defined by the Act to mean harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or the attempt to engage in any such conduct.[2] To evaluate the portion of economic impacts attributable to the critical habitat designation for the piping plover, above and beyond the ESA listing, the analysis assumes a “without critical habitat” baseline and compares it to a “with critical habitat” scenario. The difference between the two is a measurement of the net change in economic activity that may result from the designation of critical habitat for the piping plover.

8. The "without critical habitat" baseline represents current and expected economic activity under all existing modifications prior to critical habitat designation. These include the take restrictions that resulted from the listing of the piping plover as well as other Federal, state, and local requirements that may limit economic activities in the regions containing the proposed critical habitat units. For example, the U.S. Army Corp of Engineers (the Corps) would still need to consult with the Service on river or reservoir projects that may affect a listed species to ensure the proposed activities do not jeopardize the continued existence of the species, regardless of the critical habitat status of the parcel.

[2] 15 U.S.C. 1531 et seq.

9. This analysis recognizes that, even in cases where consultations would be expected in the absence of critical habitat, there are scenarios that could involve additional consultation costs as a result of the designation. For example, (1) some consultations that have already been "completed" may need to be reinitiated to address critical habitat if the project is not completed; and (2) consultations taking place after critical habitat designation may take longer because critical habitat issues will need to be addressed. In addition, the economic impact of critical habitat designation can go beyond the direct costs of consultations and project modifications. For example, even in units for which critical habitat designation is not expected to impose further project modifications beyond those required by the listing of the piping plover, government and private landowners may nonetheless incur costs resulting from critical habitat designation above and beyond those attributable to the listing of the piping plover as a threatened species. These costs might include the value of time spent in conducting Section 7 consultations beyond those associated with the listing of the piping plover, and/or delays in implementing public and private development activities with a Federal nexus, which may impose costs on individuals and society, among other effects.

10. To estimate the effect of both the listing of the plover and critical habitat designation for the species on existing and planned activities, the preparers of this report:

    A) Reviewed the consultation history involving the piping plover in Montana, North Dakota, South Dakota, Nebraska, and Minnesota;
    B) Collected information on current and planned land uses in proposed critical habitat areas for the piping plover;
    C) Identified whether a Federal nexus to expected economic activities in these units exists;
    D) Reviewed comment letters on the Draft Critical Habitat Designation and requested the opinions of Service and other federal agency personnel on: (1) whether each identified land use might be subject to modifications related to the listing of piping plovers; and (2) whether additional modifications might be imposed under the critical habitat designation.

Findings

11. Exhibit ES-2 shows the estimated levels of both all (listing-related and critical habitat related) and critical habitat-related consultations expected over the next 10 years. The estimates of future consultations are based on an examination of the consultation history for the species in recent years as well as on information collected regarding expectations for future activity in the critical habitat areas. In general, consultation rates are expected to remain unchanged into the future as most of the areas proposed for designation as critical habitat for the plover have not evidenced significant population or economic growth in recent years. Estimates of future consultations generated as a result of the designation are based on the extent to which the Service has been consulting on activities potentially affecting the plover in recent years as well as any information suggesting that consultation activity will

increase following critical habitat designation. The following is a brief summary of the information supporting the consultation estimates in Exhibit ES-2.

Exhibit ES-2
Annual Estimated Future Consultations Involving the Northern Great Plains Breeding Population of the Piping Plover

Habitat / State	Estimated Annual Number of Future Plover Consultations	Annual Number of New or Reinitiated Consultations Due to Plover Critical Habitat	Expected increase in complexity of baseline consultations due to critical habitat
Minnesota (Lake of the Woods)	2 formal[1]	2 formal[1]	none
Nelson Reservoir, Bowdoin & C.M. Russell NWR & Missouri River	2 formal[1] 3 informal	1 formal re-initiation	unlikely
North Dakota and Montana Alkali Lakes	1 formal 21 informal	0	minimal
Missouri River- North Dakota	4 formal 211 informal	0	minimal
Missouri River- South Dakota	1 formal 97 informal	6 informal	minimal
Nebraska Rivers	5 formal 38 informal	0	minimal
Total Estimate (per year)	15 formal[2] 370 informal	1 formal[2] 6 informal	--

[1] Minnesota and Montana reservoir and refuge estimates are for entire 10 year future period, not annual estimates.

[2] Includes 2 formal consultations from Minnesota, and Nelson in Montana over the 10 years. Additionally, this estimate includes the one-time reinitiation of the system-wide Missouri River formal consultation with the COE. (The estimate likely overstates annual impacts, but was used to avoid fractional estimates of consultations)

12. Considering past consultation activity as well as likely future activities and trends associated with the proposed critical habitat areas for the piping plover, it is estimated that, on average, a total of 15 formal consultations and 370 informal consultations will occur per year within critical habitat for the piping plover. This annual estimate is expected to hold over a 10 year period. Of the total number of consultations involving the plover within its critical habitat, it is estimated that only a small portion will be due solely to the designation of critical habitat for the species. These critical habitat-caused consultations include both re-initiations of past consultations as well as consultations on new activities potentially impacting the species. Over the next decade, it is estimated that on average one formal and

six informal consultation per year will be due to critical habitat designation for the piping plover.

13. Estimates of the cost of consultations were developed from a review and analysis of historical section 7 files from a number of Service field offices around the country. Based on the historical record of informal consultation complexity, it is estimated that each of the estimated 370 informal consultations per year will cost a total of approximately $1,500. It is estimated that the cost associated with informal consultations involving the piping plover will be approximately $566,000 per year over the next 10 years. Of this amount, it is estimated that approximately $9,000 per year will be directly due to the estimated six informal consultations per year generated by designation of critical habitat for the species. These estimates likely provide an upper-bound to these informal consultation costs associated with the plover due to the fact that a high percentage (over 90 percent) of these consultations are expected to include more than one species. Therefore, a large portion of the costs in these multi-species consultations are attributable to species other than the plover.

14. It is estimated that a total of 15 formal consultations per year over the next decade will occur within the proposed critical habitat areas involving the plover. Of this total, it is estimated that one formal consultation per year will result from critical habitat designation for the plover. Assuming a relatively high level of complexity associated with these consultations, it is estimated that each formal consultation will cost approximately $16,300, or $245,000 per year for all consultations, and $16,300 per year for critical habitat generated consultations. As in the case of informal consultations (discussed above), these estimates likely represent an, upper-bound to potential formal consultation costs due to the fact that a high percentage of these consultations are expected to include more than one listed species.

15. The Service completed a system-wide, multi-species consultation with the Corps Of Engineers in 2000 on the operation of the Missouri River dams and reservoirs. It is estimated, however, that due to the scope of that consultation, re-initiation resulting from critical habitat designation for the plover would cost twice the average formal consultation costs cited above, or $32,600. The costs associated with this consultation would be a one-time, rather than an annual cost.

16. Overall, this analysis found that over the next 10 years total annual consultation costs associated with activities potentially affecting the piping plover will be $843,600.[3] Of this total, it is estimated that a maximum of approximately $58,000 per year in consultation costs will be due to designation of critical habitat for the piping plover. It is this amount ($58,000) that would be avoided were there no critical habitat designation for the species.

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[3] Total consultation costs are for all parties involved in the consultations. Of the $843,600 total, approximately 34.5 percent ($291,000) would be costs to the Service, 40.0 percent ($337,500) would be costs to the action agencies, and 25.5 percent ($215,000) would be costs to private applicants.

17. In addition to the costs associated with the consultation process, costs may also arise due to conservation measures suggested by the Service at the conclusion of the consultation. These costs may include increased costs of completing a project, due to modified designs, or costs associated with delays in project implementation. Some costs may also arise out of changes in ongoing operations of projects (such as federal dams) necessary to protect a species. While only a subset of past consultations involving the plover have included requested conservation or mitigation measures, such measures can impose significant additional costs on projects or operators.

18. This analysis identified a number of potential activities within the proposed critical habitat area that either have historically been, or potentially could be, associated with project modifications or mitigation measures. The most commonly experienced mitigation action involving plover habitat has been associated with proposals for minor water depletions within the Platte River Drainage in Nebraska. The required mitigation in these cases has been a one-time contribution to a conservation fund. These contributions have generally ranged from $500 to $4,000. Another possible mitigation action involves habitat development or improvement associated with proposals for bank stabilization projects. While the Service has only recommended this mitigation action in a very small percentage of proposed bank stabilization projects, for large-scale stabilization or levee projects, mitigation costs could be substantial. Other possible suggested mitigation actions include the posting of informational signs on the plover and its breeding habitat on or near river recreation areas or boat ramps, scheduling work on highway bridge maintenance or construction to avoid critical plover breeding periods, or minor modifications to placement of oil or gas drilling pads or access roads to avoid plover habitat.

19. While a system-wide consultation on operations of the Missouri River dams and reservoirs was conducted in 2000, the impacts of any mitigation actions adopted to protect endangered species will be felt for years into the future. It is unknown at this time to what degree the reasonable and prudent measures suggested by the Service during the consultation will be adopted by the Corps of Engineers. What is clear, however, is that any modifications to the operations of dams and reservoirs on the Missouri River system have the potential to have significant economic impacts. These impacts may include, but are not limited to, impacts on value of electrical generation, impacts on downstream navigation, and impacts on recreation throughout the system. However, while altering flow regimes to protect endangered species might impose economic costs on some Missouri River users, other users might benefit. For example, retaining more water higher in the river system might hurt downstream navigation while enhancing upstream recreational opportunities.

20. In August of 2001 the COE released the “Missouri River Master Water Control Manual: Revised Draft Environmental Impact Statement (DEIS).” Within this document was an analysis of the estimated total net economic development (NED) benefits associated with all of the alternative water control plans contained in the DEIS. Four of the alternatives (all calling for modified releases at Gavins Point Dam) conform, to varying degrees, to the reasonable and prudent alternative contained in the final 2000

Biological Opinion on river operations. The COE analysis considered how these alternatives would impact economic benefits associated with navigation, recreation, flood control, water supply, and hydropower. The analysis found that all four of the alternatives having some consistency (or containing some of the beneficial actions consistent) with the recommendations in the Biological Opinion would provide a net increase in total net benefits over those anticipated under the current water control plan. This estimated increase in benefits ranged from four million to 16 million dollars per year, depending on the assumptions used and alternatives analyzed.[4]

21. As in the case of consultation costs associated with the piping plover, the finding of this analysis is that a large majority of any future project modification or mitigation costs, or benefits, associated with projects potentially impacting the plover will be due to the provisions of the Act regarding the listing of the plover, rather than designation of critical habitat for the species. For example, the multi-species Missouri River system-wide consultation involving the plover was completed in 2000, before designation of plover critical habitat. Any costs or benefits associated with modifications of river or reservoir operations recommended by the Service to protect the species is, therefore, due to the listed status of the species, rather than designation of critical habitat.

22. One potential source of plover-related costs for project operators is that of mitigation actions contained within original project proposals designed to address Service concerns associated with listed species. These mitigation actions may be included in original proposals in an effort to avoid additional modification or mitigation recommendations by the Service. In some cases the modifications or mitigation actions contained in the project proposal might be sufficient for species or habitat protection, and therefore the Service would not recommend any additional protective measures. In any case, costs associated with these "proposal-level" modifications represent real costs to project operators. The extent to which such costs are incurred in the case of projects within the proposed piping plover critical habitat area is unknown.

23. Just as there are costs associated with protection of the piping plover and its habitat, there are also potential benefits. By protecting plover habitat, ecological functions provided by these habitats are also protected or enhanced such as nutrient flows, flood capacity (of a natural river or wetland system compared to a channelized river), and the level and stability of water flows or groundwater levels.

24. While the benefits of protection of the piping plover under the Act may be wide-reaching and involve recreational use benefits, tourism, existence values, ecological services, and other ancillary benefits, no systematic economic assessment of these benefits is currently available. However there is an extensive economics literature concerning the measurement of these benefits for other wild species. This literature

[4] Table 7.13-1, "Missouri River Master Water Control Manual: Revised Draft Environmental Impact Statement." U.S. Army Corps of Engineers, Omaha, NE.

very generally indicates that the economic benefits associated with protection of the piping plover and its habitat are likely to be positive and substantial. Estimating such benefits is beyond the scope of this report.

25. While designation of critical habitat would provide a minor increase in oversight of the plover and its habitat, benefits associated with species protection can be attributed to critical habitat only to the extent that critical habitat is expected to result in additional consultations and project modifications, above those required due to listing. In the case of the northern Great Plains breeding population of the piping plover, it is estimated that critical habitat will lead to few additional consultations or project modifications. Therefore, it is expected that critical habitat designation for the plover will lead to minimal economic benefits relative to the benefits associated with baseline listing of the species.

26. In June 2001, the U.S. Fish and Wildlife Service (the Service) proposed designation of critical habitat for the Great Plains population of the piping plover (*Charadrius melodus*) on approximately 92,889 acres in Minnesota, Montana, and North Dakota and 1,338 river miles of the Missouri and Nebraska Rivers, which includes portions of Montana, North Dakota, South Dakota, and Nebraska. The purpose of this report is to identify and analyze potential economic impacts that could result from the proposed critical habitat designation. This report was prepared by Bioeconomics, Inc., under contract to the U.S. Fish and Wildlife Service's Division of Economics.

27. Section 4(b)(2) of the Endangered Species Act (Act) requires the Service to base proposed designation of critical habitat upon the best scientific and commercial data available, after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. The Service may exclude areas from critical habitat designation when the benefits of exclusion outweigh the benefits of including the areas within critical habitat, provided the exclusion will not result in extinction of the species.

28. Under section 7(a)(2) of the Act, Federal agencies must consult with the Service in order to ensure that activities they fund, authorize, or carry out are not likely to jeopardize the continued existence of the species. The Act defines "jeopardize" as taking any action that would appreciably reduce the likelihood of both the survival and recovery of the species. For designated critical habitat, section 7(a)(2) also requires Federal agencies to consult with the Service to ensure that activities they fund, authorize, or carry out do not result in destruction or adverse modification of critical habitat. Adverse modification of critical habitat is defined as any direct or indirect alteration that appreciably diminishes the value of critical habitat for the survival and recovery of the species.

29. This analysis identifies potential section 7-related impacts that will occur in the critical habitat area over the next ten years and distinguishes between economic impacts caused by the listing of the Great Plains

piping plover (hereafter, "piping plover") as endangered and those effects caused by the proposed critical habitat designation. To evaluate the increment of economic impacts attributable to the critical habitat designation for the piping plover, beyond economic impacts of listing, the analysis evaluates a "without critical habitat" scenario and compares it to a "with critical habitat" scenario. The difference between the two is a measure of the net change in economic activity that may result solely from the designation of critical habitat for the piping plover. In the event that a land use or activity would be limited or prohibited by another existing statute, regulation, or policy, the economic impacts associated with those limitations or prohibitions are identified, but would not be attributable to critical habitat designation.

30. The critical habitat designation for the piping plover encompasses land under private, State, Tribal, and Federal ownership, with Federal lands including lands managed by the U.S. Fish and Wildlife Service, Bureau of Reclamation, and Army Corps of Engineers. This analysis assesses how critical habitat designation for the piping plover may affect current and planned land uses and activities in the proposed critical habitat designation over the next ten years. For non-Federal lands, section 7 consultations and resulting modifications to land uses and activities can only be required when a Federal nexus, or connection, exists. A Federal nexus arises if the activity or land use of concern involves Federal permits, Federal funding, or another form of Federal involvement. Section 7 consultations are not required for activities on State, county, Tribal, and private land that do not involve a Federal nexus.

31. To be considered in the economic analysis, activities must be "reasonably foreseeable," including, but not limited to, activities which are currently authorized, permitted, or funded, or for which proposed plans are currently available to the public. For purposes of this analysis, current and future activities occurring in the proposed critical habitat area during the next ten years that could potentially result in section 7 consultations or modifications are considered.

1.1 Description of Species and Habitat

32. The piping plover (*Charadrius melodus*) is a small (approximately 17-18 centimeters long and 43-63 grams in weight), migratory member of the shorebird family (Charadriidae). It is one of six species of belted plovers in North America. During the breeding season adults have single black bands across both the forehead and breast, orange legs and bill, pale tan upper parts, and are white below. The adults lose the black bands and their bill becomes grayish-black during the winter. The plumage of juveniles is similar to that of wintering adults.

33. The breeding range of the piping plover extends throughout the northern Great Plains, the Great Lakes, and the Atlantic Coast in the United States and Canada. Three breeding populations of piping plovers have been described: the northern Great Plains population, the Great Lakes population, and the Atlantic Coast population.

34. Piping plovers formerly nested throughout much of the Great Lakes region in the north-central United States and south-central Canada, but currently nest only in northern Michigan and at one site in northern Wisconsin. On the Atlantic Coast, piping plovers nest from Newfoundland, southeastern Quebec, and New Brunswick to North Carolina. Sixty-eight percent of all nesting pairs breed in Massachusetts, New York, New Jersey, and Virginia (Service 1999).

35. The northern Great Plains population's breeding range includes southern Alberta, northern Saskatchewan, and southern Manitoba; south to eastern Montana, North and South Dakota, southeastern Colorado, Iowa, Minnesota, Nebraska, and east to Lake of the Woods in north-central Minnesota. The majority of the United States pairs are in the Dakotas, Nebraska, and Montana. Fewer birds nest in Iowa and Colorado with occasional nesting in Oklahoma and Kansas.

36. The primary constituent elements (PCEs) of critical habitat for the northern Great Plains population of the piping plovers are those habitat components essential for the biological needs of courtship, nesting, sheltering, brood-rearing, foraging , roosting, intraspecific communication, and migration. The areas proposed by the Service as critical habitat for the piping plover contain one or more of the PCEs for survival of the plover. Proposed critical habitat for the northern Great Plains breeding population of piping plovers includes areas that either: (1) are currently or recently (at the time of listing) used for breeding; or (2) were documented to have been occupied historically and still have most or all of the primary constituent elements; or (3) are not specifically documented to have been occupied, but are deemed potential breeding habitat since these areas are part of a riverine system, support documented nesting, are within the historic geographic range, and have recently developed primary constituent elements; or (4) include habitat complexes, including wetland and adjacent upland areas, essential to the conservation of this species (50 CFR 424.13(d)).

37. Each breeding habitat type found in the northern Great Plains, including mixosaline to hypersaline wetlands, rivers, reservoirs, and inland lakes, contains a distinct set of primary constituent elements. The habitat types and primary constituent elements necessary to sustain the northern Great Plains breeding population of piping plovers are described as follows:

On prairie alkali lakes and wetlands the primary constituent elements include: (1) shallow, seasonally to permanently flooded, mixosaline to hypersaline wetlands with sandy to gravelly, sparsely vegetated beaches, salt-encrusted mud flats, and/or gravelly salt flats; and (2) springs and fens along edges of alkali lakes and wetlands; and (3) adjacent uplands up to 200 feet beyond the high water mark

of the alkali lake or wetland.

On rivers the primary constituent elements include sparsely vegetated channel sandbars, sand and gravel beaches on islands, and temporary pools on sandbars and islands. Natural islands occur midstream in wide, open channels, whereas shorelines occur along mainstem reservoirs.

On reservoirs the primary constituent elements include sparsely vegetated shoreline beaches, peninsulas, and islands composed of sand, gravel, or shale.

On inland lakes (Lake of the Woods) the primary constituent elements include sparsely vegetated and windswept sandy to gravelly islands, beaches, and peninsulas.

1.2 Proposed Critical Habitat

38. The Service has proposed critical habitat designation for the Great Plains population of the piping plover on approximately 196,577 acres of land and water bodies and 1,338 miles of river in five States. Approximately 137,407 acres (70 percent of the total acreage proposed) are located on Federally-owned or managed lands; 4,916 acres (2.5 percent) are State or local government lands; and the remaining 54,254 acres (28 percent) are located on private lands.[5] In addition, of the 1,338 miles of river included in the proposed designation, approximately 568 miles (42 percent) are recognized as Federally-owned; 320 miles (24 percent) are owned by State or local government; and 450 miles (34 percent) are privately owned. Approximately 82 miles (less than one percent) of these Federally or State-owned riverine reaches in Montana border tribal lands.

39. Exhibit 1-1 provides a summary of land ownership and approximate acreage or river miles of proposed critical habitat for each habitat type. For prairie alkali lakes and wetlands, the acreage shown in the exhibit includes a buffer of 200 feet of land outside of the wetlands' high water mark. For the inland lake (Lake of the Woods in Minnesota), habitat includes islands, peninsulas, and sandy points or spits that interface with the lake. Additional acreage in Montana includes vegetated shoreline beaches, peninsulas, and islands composed of sand, gravel, or shale that interface with Lake Bowdoin and Nelson Reservoir, as well as Fort Peck Reservoir below the top of the maximum operating pool. Riverine reaches shown in the exhibit include inter-channel islands and sandbars, including their temporary pools and shoreline. Miles of reservoir reaches include shorelines, peninsulas, and islands, below the top of the maximum operating pool (highest normal operating level for the reservoir).

[5] Detail may not add to 100 percent due to rounding.

40. For additional information about land ownership and approximate acreage or river miles of proposed critical habitat in each unit, a brief description of each unit is provided in Appendix A.

Exhibit 1-1

PROPOSED CRITICAL HABITAT UNITS FOR THE PIPING PLOVER IN HABITAT TYPES SUMMARIZED BY OWNERSHIP

	Federal (% of total)	State (% of total)	Tribal (% of total)	Private (% of total)	Total
Area of land, large reservoirs, and lakes (expressed in acres)					
Prairie alkali lakes and wetlands (Montana, North Dakota)	53,400.6 (48%)	4,680.9 (4%)	0	54,253.5 (48%)	112,335
Inland lakes (Minnesota)	0	235.2 (100%)	0	0	235.2
Nelson Reservoir, Fort Peck Reservoir, and Bowdoin National Wildlife Refuge (lake) (Montana)	84,006.2 (100%)	0	0	0	84,006.2
Riverine and reservoir reaches (expressed in miles)					
Niobrara, Loup, and Platte Rivers (Nebraska)	0	13 (2.8%)	0	450 (97.2%)	463
Missouri River[1] (Montana, North Dakota, South Dakota, Nebraska)	567.7 (64.9%)	307.3 (53.1%)	81.7[2] (0.1%)	0	875[2]

1. Ownership of sites along the Missouri River varies by State. The Federal government owns the reservoir shorelines below the maximum operating pool. In Montana, islands and sandbars are recognized as owned by the State except along the reservation boundaries of the Assiniboine and Sioux Tribes of Fort Peck. The Assiniboine and Sioux Tribes of Fort Peck own land to the mid-channel of the Missouri River adjacent to the Reservation boundary. In North Dakota and South Dakota, islands and sandbars are recognized as owned by the State. However, there are some exceptions where adjacent landowners in South Dakota actually have deeds to land under the Missouri River where sandbars can form. Additionally, the Fort Laramie Treaty of 1868 recognizes the Missouri River's east bank as the boundary of the Great Sioux Reservation. Thus, the Tribes along the Missouri River recognize their boundaries as the boundaries identified in the Fort Laramie Treaty. In Nebraska, islands and sandbars are owned by the adjacent landowner. Fort Laramie Treaty provisions also apply to tribes in Nebraska that were a part of the Great Sioux Nation.
2. 81.7 miles of the Missouri River are shared by the State of Montana and Reservation land. Therefore, the percentages do not total 100, and the overall miles of river (875) is correct.

1.3 Framework for Analysis

41. As noted above, this economic analysis examines the impacts to specific land uses or activities within those areas proposed as critical habitat for the Great Plains breeding population of the piping plover. Impacts considered include future effects associated with the listing of the species within the designation, as well as any effect of the designation above and beyond those impacts associated with listing. The listing of the species is the most significant aspect of species protection, as it provides the majority of protections by making it illegal for any person to "take" a listed species. Take is defined by the Act to mean harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.

42. To quantify the economic impacts attributable to critical habitat designation for the piping plover, beyond the impacts of listing, the analysis evaluates a "without critical habitat" scenario and compares it to a "with critical habitat" scenario. The "without critical habitat" baseline for analysis represents current and expected economic activity under all modifications prior to critical habitat designation, including protections already accorded the piping plover under Federal and State laws, such as the a Montana Environmental Policy Act.[6] The difference between the two scenarios measures the net change in economic activity attributable to the designation of critical habitat for the piping plover.

1.4 Methodological Approach

43. This report relies on a sequential methodology and focuses on distilling the salient and relevant aspects of potential economic impacts of designation. The methodology consists of:

- Considering what specific activities take place on the State, Tribal, local, and private land incorporated within the critical habitat designation;
- Identifying whether activities taking place on the State, Tribal, local, and private land are likely to involve a Federal nexus;

[6] The Montana Environmental Policy Act (MCA §§ 75-10-101 et seq.) requires an Environmental Impact Statement (EIS) as a prerequisite for any proposed action that may significantly affect the environment. An EIS assesses any major economic, social, and environmental repercussions potentially occurring in areas impacted by the proposal.

- Evaluating the likelihood that identified Federal nexuses will result in consultations and, in turn, that consultations will result in modifications to projects;

- Attributing costs to any expected consultations and project modifications;

- Assessing the extent to which small businesses would incur costs as a result of modifications or delays to projects;

- Determining economic costs associated with public perceptions about the effect of the proposed critical habitat designation on the private land subject to designation; and

- Determining the proportion of these costs that would be attributable to the proposed critical habitat designation as opposed to the listing of the piping plover as an endangered species.

1.5 Information Sources

44. The primary sources of information for this report were communications with personnel from the Service and affected Federal, State, Tribal, and local agencies, as well as publicly available data such as Biological Opinions from prior plover consultations, and U.S. Census demographic and economic information.

45. This section discusses the socioeconomic characteristics of areas proposed as critical habitat for the piping plover. In additional, this section provides relevant information about regulations and requirements that exist in the baseline (i.e., the "without critical habitat" scenario).

2.1 Socioeconomic Profile of the Critical Habitat Areas

46. To provide context for the discussion of potential economic impacts due to proposed critical habitat, this section summarizes key economic and demographic information for the counties and cities containing proposed critical habitat for the piping plover. City and county level data are provided to convey the nature of the regional economy. However, because the critical habitat designation on average covers less than 1 percent of the land area in the counties containing plover critical habitat, the data may not accurately reflect the socioeconomic characteristics of the actual critical habitat area.

2.1.1 Population

47. This critical habitat designation spans a diverse array of urban and rural areas. Exhibit 2-1 lists the population size, per capita income, and population density for all the counties which have critical habitat designated within their boundaries and for the State as a whole. The percent of the State population living within a county containing critical habitat ranges from less than one percent (Lake of the Woods County in Minnesota) to 54 percent (Nebraska). Of the 70 counties, 59 have a lower per capita income, and 52 have fewer persons per square mile, than their respective State averages. Although these measures vary considerably across States, the data suggests that overall the counties are less densely populated, and have a lower than average income per capita than is found in their respective States.

Exhibit 2-1
Baseline Characteristics of All Counties Containing Northern Great Plains Critical Habitat For The Piping Plover

State	County	Population	Income Per Capita	Persons per square mile
South Dakota	**State Average/ Total**	**754,844**	**$21,076**	**9.9**
	Brule	5,364	$17,486	6.5
	Bon Homme	7,260	$16,032	12.9
	Buffalo	2,032	$12,074	4.3
	Campbell	1,782	$15,432	2.4
	Charles Mix	9,350	$19,572	8.5
	Clay	13,537	$15,867	32.9
	Corson	4,181	$10,784	1.7
	Dewey	5,972	$12,232	2.6
	Gregory	4,792	$17,856	4.7
	Hughes	16,481	$23,713	22.2
	Lyman	3,895	$17,853	2.4
	Potter	2,693	$22,571	3.1
	Stanley	2,772	$16,812	1.9
	Sully	1,556	$23,546	1.5
	Walworth	5,974	$19,293	8.4
	Yankton	21,652	$21,207	41.5
Minnesota	**State Average / Total**	4,919,479	$26,243	61.8
	Lake of the Woods	4,522	$18,995	3.5
Nebraska	**State Average / Total**	1,711,263	$23,618	22.3
	Boyd	2,438	$18,519	4.5
	Brown	3,525	$18,271	2.9
	Buffalo	42,259	$20,711	43.7
	Butler	8,767	$20,682	15
	Cass	24,334	$22,952	43.5
	Colfax	10,441	$20,171	25.3
	Dawson	24,365	$19,633	24.1
	Dodge	36,160	$21,946	67.7
	Douglas	463,585	$29,240	1400.6
	Gosper	2,143	$17,687	4.7
	Hall	53,534	$21,966	98

Exhibit 2-1 Baseline Characteristics of All Counties Containing Northern Great Plains Critical Habitat For The Piping Plover				
State	**County**	**Population**	**Income Per Capita**	**Persons per square mile**
Nebraska	Hamilton	9,403	$20,894	17.3
	Holt	11,551	$21,606	4.8
	Howard	6,567	$16,864	11.5
	Kearney	6,882	$24,065	13.3
	Keya Paha	983	$5,666	1.3
	Knox	9,374	$18,633	8.5
	Merrick	8,204	$20,862	16.9
	Nance	4,038	$18,578	9.2
	Phelps	9,747	$24,837	18.1
	Platte	31,662	$22,045	46.7
	Polk	5,639	$23,152	12.8
	Rock	1,756	$22,453	1.7
	Sarpy	122,595	$21,501	508.7
	Saunders	19,830	$20,017	26.3
North Dakota	**State Average / Total**	642,200	$20,103	9.3
	Benson	6,964	$1,325	5
	Burke	2,242	$18,299	2
	Burleigh	69,416	$23,082	42.5
	Divide	2,283	$15,996	1.8
	Dunn	3,600	$11,783	1.8
	Eddy	2,757	$15,108	4.4
	Emmons	4,331	$12,837	2.9
	Kidder	2,753	$12,702	2
	Logan	2,308	$14,498	2.3
	McHenry	5,987	$15,371	3.2
	McIntosh	3,390	$14,958	3.5
	McKenzie	5,737	$15,428	2.1
	McLean	9,311	$17,762	4.4
	Mountrail	6,631	$15,831	3.6
	Pierce	4,675	$19,387	4.6
	Renville	2,610	$17,861	3

Exhibit 2-1 Baseline Characteristics of All Counties Containing Northern Great Plains Critical Habitat For The Piping Plover				
State	**County**	**Population**	**Income Per Capita**	**Persons per square mile**
North Dakota	Sheridan	1,710	$15,358	1.8
	Stutsman	21,908	$20,616	9.9
	Ward	58,795	$20,190	29.2
	Wells	5,102	$20,512	4
	Williams	19,761	$19,547	9.5
Montana	**State Average / Total**	902,195	$19,660	6.2
	Garfield	1,279	$13,777	0.3
	McCone	1,977	$15,729	0.7
	Phillips	4,601	$15,171	0.9
	Richland	9,667	$17,729	4.6
	Roosevelt	10,620	$13,840	4.5
	Sheridan	4,105	$18,395	2.4
	Valley	7,675	$18,899	1.6

2.1.2 Economic Activity

48. As detailed in Exhibit 2-1, the counties that include portions of the proposed critical habitat area for the plover vary dramatically in terms of population density, and to a lesser degree income. These statistics reflect the varied environments and large spatial extent of the proposed designation. Just as the proposed critical habitat is found in a variety of environmental and political settings, the record of economic activity, including both past and expected future activity, varies across the designation. The following briefly describes the physical and economic setting of each distinct habitat type along with a discussion of likely future economic trends affecting the proposed critical habitat.

Inland Lakes (Lake of the Woods)

49. The Lake of the Woods critical habitat is located in a sparsely populated area of northern Minnesota (less than five people per square mile for the county as a whole). Additionally, the areas within the county designated as plover habitat are wholly state-owned and are currently managed as state wildlife management areas or scientific and natural areas. Due to the land ownership, setting, and rural nature of this unit, it is unlikely that significant economic development pressures will be placed on this plover habitat in the foreseeable future. Conflicts with plover habitat, if any, are more likely to be associated

with Federal actions associated with Lake of the Woods management or navigation (as discussed in Section 3).

Montana Reservoirs and Refuges

50. In the state of Montana, portions of Fort Peck Reservoir, Nelson Reservoir, and Bowdoin National Wildlife Refuge (NWR) have been proposed as critical habitat for the plover. As was the case for Lake of the Woods, the counties containing these water bodies are sparsely populated. Overall, this portion of Montana has seen a steady decline in population over the last decade.[7] Much of the economic activity in the counties surrounding these water bodies is associated with ranching and to a lesser extent farming. Only one of the three Montana reservoirs containing proposed critical habitat for the plover is not currently under Federal management and ownership as a national wildlife refuge (Nelson Reservoir is managed by the Bureau of Reclamation).

51. A combination of the rural nature and contracting population surrounding the Montana reservoirs containing proposed piping plover critical habitat, along with the predominant Federal ownership or control of these areas (primarily as NWR's), suggest that the foreseeable future will not present significant growth or development pressures on these critical habitat areas.

Montana and North Dakota Alkali Lake Habitat

52. As noted above, all Montana counties containing designated plover habitat have seen a decrease in population since 1990. Additionally, only two of the 21 North Dakota counties containing plover critical habitat have seen an increase in population between 1990 and 1999; Burleigh County surrounding the capital city Bismark grew by 12 percent, and Ward County containing Minot, North Dakota grew by 0.8 percent over the decade.[8] Ward County is the only county containing alkali wetland habitat for the plover in either Montana or North Dakota to experience any growth in population over the previous decade. This trend reflects both the rural and nature of these counties as well as the general decline in small agricultural production throughout this portion of the western U.S.

53. In general, neither trends in population or economic growth suggest that substantial new development pressures will impact designated plover habitat within the Montana and North Dakota alkali lakes and wetlands habitat in the foreseeable future. An exception to this trend may be associated with new oil or

[7] Between 1990 and 1999 all Montana counties containing proposed critical habitat for the plover saw a decline in population, based on U.S. Department of the Census: **http://www.census.gov/population/estimates/county/**

[8] 1990 U.S. Department of Census.

gas exploration in Sheridan County, Montana, which has occurred in plover habitat in the past, and may continue or increase in future years.

Missouri River Habitat in ND and SD

54. Between 1990 and 1999 North Dakota saw its population fall by 0.8 percent. In South Dakota, statewide population rose by 5.3 percent during this period. The general trend for population throughout this region was one of decreases in predominantly rural counties and slight increases in more urban counties. This trend was also in evidence along the Missouri River corridor containing proposed piping plover critical habitat within the two states. While all other Missouri River counties in North Dakota lost population during the 1990's, Burleigh County, with the state capital Bismark gained 12 percent. In South Dakota, the picture along the river was more mixed, with a significant number of counties losing population while others (such as Stanley and Hughes Counties surrounding the state capital Pierre) gained.

55. Activities along the Missouri River throughout North Dakota and South Dakota include agriculture and residential use, as well as significant recreational use associated with the river and its reservoirs (fishing, boating, camping, etc.). The Missouri River throughout these states is largely controlled by either large impoundment dams or regulation dams controlled by the U.S. Army Corps of Engineers.

56. While a large portion of the river corridor throughout these two states is proposed as plover critical habitat, the designation is narrowly drawn within the river corridor to exclude most non-river-related development. The primary growth pressures on critical habitat for the plover are expected to be associated with direct modifications of the river or its shorelines such as bank stabilization, boat dock construction, or dredging activities. Some of this activity has been experienced in the past within North Dakota and South Dakota and it is expected that this type of development pressure will continue at a moderate level into the future. This trend is particularly likely in areas near major population centers.

Nebraska River Habitat

57. As in North Dakota and South Dakota, the riverine habitat for the piping plover in Nebraska is found in a variety of socioeconomic settings. Population densities among counties containing critical habitat range from extremely sparse to relatively urban. Over the period from 1990 to 1999 the overall population of Nebraska increased by 5.6 percent. Within the counties containing designated plover critical habitat, population changes ranged from a decrease of 16.3 percent (Rock County) to an increase of 19.4 percent (Sarpy County, near Omaha) over the same period. Like North Dakota and South Dakota habitat for the plover, while large sections of the river corridor throughout Nebraska are proposed as plover critical habitat, the designation is narrowly drawn within the river corridors to exclude most non-river-related development. The primary growth pressures on critical habitat for the

plover are expected to be associated with direct modifications of the river or its shorelines such as, bank stabilization, or water depletion. Some of this activity has been experienced in the past within the state and it is expected that this type of development pressure will continue into the future, particularly in areas near major population centers.

2.2 Baseline Information and Regulations

58. This section provides relevant information about the informational and regulatory elements that exist in the baseline, i.e., the "without critical habitat" scenario. Information or regulations may serve to limit or encourage the development and resource management activities discussed above, affect the section 7 consultation process, and/or trigger consultations even in the absence of the designation of critical habitat.

2.2.1 Recovery Plan

59. An important component of the baseline information on the piping plover and its habitat is the *Great Lakes and Northern Great Plains Piping Plover Recovery Plan* (Recovery Plan) published in 1988, and updated in 1994.[9] While this recovery plan imposes no binding restrictions on landowners and managers within the proposed critical habitat designation, it serves as an important information source for landowners or managers regarding plover habitat. A large proportion of the proposed critical habitat units lie wholly within areas described (either explicitly by name or description of habitat characteristics) as essential habitat for the plover in the Recovery Plan.

2.2.2 Listing

60. In December 1985, the Service listed the northern Great Plains breeding population of the piping plover as a threatened species. Under the listing, Federal agencies must consult with the Service regarding any actions they fund, authorize, or carry out that could potentially jeopardize the continued existence of the species. The listing of the piping plover is the most significant aspect of baseline protection, as it provides the most protections since it makes it illegal for any person to "take" a listed species, which is defined by the Act to mean harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.

[9] U.S. Fish and Wildlife Service 1988. Great Lakes and Northern Great Plains Piping Plover Recovery Plan. U.S. Fish and Wildlife Service, Twin Cities, MN. 160 pp.

2.2.3 Overlap with Other Listed Species

61. Generally, if a consultation is triggered for any listed species, the consultation process will also take into account all species known or thought to occupy areas on or near the project lands. The Service field offices in South Dakota, North Dakota, Montana, and Nebraska have conducted formal consultations on the piping plover in combination with several species, as indicated in Exhibit 2-2.

Exhibit 2-2 **Listed Species found within Proposed Piping Plover Critical Habitat**	
(A) Federally Listed Endangered Species	
	Interior least tern (Sterna antillarum) pallid sturgeon (Scaphirhynchus albus) whooping crane (Grus americana)
(B) Federally threatened species:	
	bald eagle (Halieatus leucopcephalus)
(C) State listed species:	
	osprey (Pandion haliaetus) (SD) black tern (Chlidonias niger) (MT) Forster's tern (Sterna forsteri) (MT) Caspian tern (Sterna caspia) (MT) Franklin's gull (Larus pipixcan) (MT) black-crowned night heron (Nycticorax nycticorax) (MT) banded killifish (Fundulus diaphanus) (SD) blacknose shiner (Notropis heterolepis) (NE, SD) finescale dace (Phoxinus neogaeus) (NE, SD) lake sturgeon (Acipenser fulvescens) (NE) northern redbelly dace (Phoxinus eos) (NE, SD) pearl dace (Margariscus margarita) (NE, SD) sturgeon chub (Macryhybopsis gelida) (NE, SD) Trout-perch (Percopsis omiscomaycus) (SD) river otter (lutra canadensis) (NE, SD) blandings turtle (Emydoidea blandingii) (SD) false map turtle (Graptemys pseudogeographica) (SD)
(D) Overlap with Existing Critical Habitat	
	Whooping crane (Grus americana) critical habitat has been designated along part of the Platte River in Nebraska

62. The presence of so many additional listed species within the proposed critical habitat area indicates that there is already a high degree of regulatory review by the Service, as well as State Fish and Wildlife agencies, of activities within these areas. The net effect of the presence of these species is that the number of consultations conducted for the piping plover alone is likely be smaller than would be expected in the absence of these species. Indeed, most past consultations on the piping plover involve two or more species per consultation. Thus, the cost of a consultation that involves the piping plover is not fully attributable to the presence of this species or its habitat. Nonetheless, because consultations must consider each listed species separately, a certain amount of research and time will be spent on the piping plover regardless of the presence of other species.

2.2.4 State and Local Baseline Regulatory Protection

63. Some state and local baseline regulatory protection exists within the proposed critical habitat designations for the piping plover (such as the Montana Environmental Policy Act, or local zoning regulations). Where proposed activities directly affect proposed critical habitat areas, these state and local regulations may provide a level of baseline protection. The narrowly drawn extent of the proposed critical habitat areas, however, particularly in regards to the riverine habitat, likely limit the amount of baseline protection for the species above that provided by existing Service oversight related to the listing of the plover.

2.2.5 Executive Orders on Tribal Lands

64. Several units of the proposed critical habitat designation for the piping plover border Tribal lands. Any consultations on these lands would be conducted in accordance with Executive Order 13175, entitled *Consultation and Coordination with Indian Tribal Governments* (hereafter "Order") which was signed by President Clinton on November 6, 2000. This Order builds on the policies outlined in the Presidential Memorandum of April 29, 1994, entitled *Government-to-Government Relations with Native American Tribal Governments* (hereafter "Memorandum"). Both the Order and the Memorandum State that the executive departments and agencies shall work with Federally recognized Indian Tribes on a government-to-government basis. The Order enhances that discussion by stating that, for example:

- The Federal Government shall grant Tribes the maximum administrative discretion possible;

- Federal Agencies shall encourage Indian Tribes to develop their own policies to achieve program objectives and, where possible, defer to Indian Tribes to establish standards;

- No Agency shall promulgate any regulation that has Tribal implications, that imposes substantial direct compliance costs on Indian Tribal governments, and that is not required by statute, unless 1) the funds necessary to pay the direct costs incurred by the Tribe in complying with the regulation are provided by the Federal Government, or 2) the agency a) consults with the Tribal officials early in the process of developing the regulation, b) provides a Tribal summary impact statement in the preamble of the regulation, and c) makes available to the Office of Management and Budget any written communications submitted to the Agency by the Tribal officials;

- Agencies shall review and streamline the processes under which Indian Tribes apply for waivers; and

- Each Agency shall designate an official with the principal responsibility for the agency's implementation of the Order.

65. While the full effect of this Order will depend on its implementation over time, it appears that the net effect is likely to be a reduction in the potential for unfunded section 7 consultations, project modifications, and other impacts associated with the designation of critical habitat for the piping plover on Tribal lands.

3.1 Estimation of Impacts Associated with Future Consultations Involving the Piping Plover

66. The following sections address the number and associated costs of future consultations involving the piping plover. This discussion is presented for each of the states and different habitat types involved.

67. The proposed designation of critical habitat for the northern Great Plains breeding population of the piping plover includes Federal, state, Tribal, and private lands. Critical habitat designation has the potential to modify land uses, activities, and other actions on federally-managed land that threaten to adversely modify habitat. For activities and land uses on state, Tribal, and private lands to be affected by critical habitat designation, a Federal nexus must exist (i.e., the activities or land uses involve a Federal permit, Federal funding, or require Federal actions). Activities on state and private lands that do not involve a Federal nexus are not affected by the designation of critical habitat.

3.1.1 Cost Categories for Section 7 Consultations on Critical Habitat

68. There are two primary classes of costs potentially associated with critical habitat designation for the piping plover: costs associated with preparation for and participation in the actual formal or informal consultation, and costs associated with project modifications that might result from recommendations by the Service as a result of a consultation.

69. Parties involved in Section 7 consultations include the Service and the Federal agency involved in the proposed activity. In cases where the consultation involves an activity proposed by a state or local government or a private entity (the "applicant"), the Federal agency with the nexus to the activity serves as the liaison with the Service.

70. To initiate a formal consultation, the relevant Federal agency submits to the Service a consultation request with an accompanying biological analysis of the effects of the proposed activity. This biological analysis may be prepared by the relevant Federal agency, the state, county, or municipal

entity whose action requires a consultation, or an outside party hired by the agency or landowner. Once the Service determines that these documents contain sufficient detail to enable a assessment, the Service has 135 days to consult with the relevant Federal agency and render its biological opinion. During the consultation, parties discuss the extent of the impacts on critical habitat and propose ways to avoid and minimize these impacts. Some applicants incur costs to prepare analyses as part of the consultation package. These costs vary greatly depending on the specifics of the project. In many cases, these costs are attributable to the fact that a species has been listed as threatened or endangered, rather than the designation of critical habitat.

71. In addition, both public and private entities may experience delays in projects and other activities that have a Federal nexus due to critical habitat designation. Regardless of funding (i.e., private or public), projects and activities are generally undertaken only when the benefits exceed the costs, given an expected project schedule. If costs increase, benefits decrease, or the schedule is delayed, a project or activity may no longer have positive benefits, or it may be less attractive to the entity funding the project. For example, if a private entity undertaking a residential development must delay groundbreaking as result of an unresolved Section 7 consultation, the developer may incur additional financing costs. Delays in public projects, such as construction of a new park, may impose costs in the form of lost recreational opportunities. The magnitude of these costs of delay will depend on the specific attributes of the project, and the seriousness of the delay.

72. The potential costs and benefits associated with critical habitat designation for the Great Plains population of the piping plover are defined in this analysis as the costs and benefits that would result from critical habitat designation over and above those costs and benefits existing in the baseline. For example, a consultation involving the plover and its critical habitat may impose little or no additional costs or benefits over the baseline in several instances:

- If the critical habitat unit is occupied by the species, and the Service has a history of consulting on the species and its habitat, addition of critical habitat designation for the species is unlikely to trigger new consultations above those that would have occurred due to the presence of the species.

- If other Federally listed species are found within the proposed critical habitat unit, designation of critical habitat for a species may trigger no or few additional consultations above those that would include the other listed species in the absence of critical habitat designation.

73. Even if there are unlikely to be a significant number of new consultations resulting from the designation of critical habitat for a species, it is possible that the consultations that do occur will increase somewhat in difficulty due to the requirements that the Service consider critical habitat impacts.

74. The following discussion of the impacts of critical habitat designation for the Northern Great Plains population of the piping plover examines expected impacts for the following habitat areas and classifications: 1) Minnesota (Lake of the Woods), 2) Montana lakes, refuges, and Missouri River habitat, 3) alkali lakes and wetlands in Montana and North Dakota, 4) Missouri River habitat in North Dakota and South Dakota, and 5) river habitat in Nebraska. The extent of baseline protection for the species is discussed in the context of the plover's consultation history, and the consultation history of other federally listed species in the area. Estimates of the probable level of all plover-related consultations are discussed, and the likelihood of new consultations resulting from critical habitat designation for the plover is then estimated for each habitat/area. The time period used for examination of future consultations is 10 years.

75. Consistent with the May 11, 2001 decision by the U.S. Court of Appeals for the Tenth Circuit, Sections 3.2 through 3.6 present estimates of the expected number of baseline consultations involving the piping plover for the next 10 years.[10] Additionally, these sections provide an estimate of the number of new consultations due to critical habitat designation for the plover. In Section 3.7, cost estimates are developed, where possible, for all future consultations estimated for the plover (both baseline and due to critical habitat). Section 3.8 addresses the issue of benefits associated with protection of the plover.

3.2 Minnesota (Lake of the Woods)

3.2.1 Current Land Uses

76. The area proposed for critical habitat in Minnesota is owned entirely by the State of Minnesota. Part of it is a state wildlife management area and the rest is a designated scientific and natural area. The predominant use of the area is wildlife habitat and 'nature enjoyment' (bird watching, hiking, etc.) by visitors. There are a few small picnic areas and boaters may stop on the beach to picnic, etc., but the state of Minnesota closes plover nesting areas to such activities during the nesting season.

3.2.2 Consultation History

77. A review of the history of consultation activities in Lake of the Woods County, Minnesota by Service personnel showed that during the period from 1996 through the present no consultations have involved the piping plover. Overall, there were 15 consultations involving any species within Lake of the Woods County during this period of time. It should be noted that the 235 acres of proposed piping

[10] New Mexico Cattle Growers Association, et al. v. U.S. Fish and Wildlife Service, No. 00-2050, U.S. Court of Appeals, Tenth Circuit, May 11, 2001.

plover critical habitat within Lake of the Woods County accounts for only an extremely small proportion (far less than one percent) of Lake of the Woods County.

3.2.3 Anticipated Future Consultations Involving the Piping Plover

78. There are two primary Federal actions that may trigger consultations involving the piping plover within the Lake of the Woods unit. The beach habitats used by nesting piping plovers within the unit are gradually eroding, resulting in a loss of nesting habitat. Two potential causes for this loss of habitat will likely involve federal actions. First, the U.S. Army Corps of Engineers constructed offshore jetties in the Lake of the Woods to maintain a channel for boat traffic. These jetties may have an impact on the beach habitat and could be affected by the critical habitat designation. It is unclear, however, whether the critical habitat designation would affect actions associated with these jetties beyond the effect of the Section 9 take prohibitions. Second, the Lake of the Woods Control Board, which is comprised of one member from the U.S. Army Corps of Engineers and one representative of the Canadian Environmental Protection Service, oversees the manipulation of water levels in Lake of the Woods. Because the water levels set by this board may affect the erosion of piping plover habitat, the actions of this board may also be construed as a Federal action that could be affected by the critical habitat designation.

79. In recognition of the issues discussed above, it is estimated that two formal consultations involving the piping plover will occur over the next 10 years within the Minnesota, Lake of the Woods critical habitat unit. These consultations are expected to have a minimum level of complexity, and to primarily involve coordination of activities between governmental agencies. Estimates of associated consultation costs are presented in Exhibits 3-3 and 3-4.

3.2.4 Estimated Future Plover Consultations Due to Critical Habitat

80. Since the areas considered for critical habitat designation within the Lake of the Woods unit are occupied by the piping plover, it is unclear whether any possible future consultations associated with the plover would be attributable to critical habitat designation, or would have occurred in the baseline under the take provisions of the Act. However, due to the lack of any consultation history involving the plover within this unit, this analysis conservatively assumes that critical habitat designation for the piping plover within the Lake of the Woods Unit will be responsible for the two anticipated consultations involving the plover within this unit over the next decade.

3.3 Montana Lakes, Refuges, and Missouri River Habitat

3.3.1 Current Land Uses

81. **Nelson Reservoir** - Nelson Reservoir is a Bureau of Reclamation project located in East-central Philips County Montana. This 1,845 hectare reservoir and the proposed piping plover critical habitat surrounding it has a number of potential nexuses to federal agencies or actions. Activities on or surrounding the reservoir include: recreation (camping and fishing), grazing, irrigation, recreational development (boat ramp construction), residential development, and Bureau of Reclamation piping plover habitat enhancement projects.

82. **Bowdoin National Wildlife Refuge** - The Bowdoin refuge (also located in east-central Phillips County) is federally owned and is managed by the Service. Activities within this unit are controlled by the Service, and any activities that might potentially impact plover habitat would also involve a nexus with the Service. Potential activities that might impact plover habitat would include: recreational activities such as birdwatching and hiking, development of recreational facilities, habitat enhancement projects, and possibly agriculture on adjacent lands.

83. **Missouri River and Fort Peck Reservoir** - Fort Peck Reservoir is a large Missouri River reservoir that is wholly contained within the Charles M. Russell National Wildlife Refuge. Uses of the refuge and reservoir include recreational uses such as fishing, hunting, boating, and wildlife viewing, as well as some grazing activity. Below Fort Peck Dam, the Missouri River shares many of the uses found on the lower river in North Dakota and South Dakota including boat ramps, utility crossings, bank stabilization, residential/ commercial, recreational development, recreational activities, irrigation intakes, bridges, and grazing.

84. Along much of the free-flowing section of the Missouri River portion proposed as piping plover critical habitat the river is bordered on the north by the Fort Peck Indian Reservation.

3.3.2 Consultation History

85. Between 1990 and the current time there has been one formal consultation involving the piping plover within the proposed piping plover critical habitat units within Montana (involving the Bureau of Reclamation and operations of Nelson Reservoir). The one formal plover consultation in Montana also involved several other listed species (bald eagle, peregrine falcon, grizzly bear, gray wolf, and black-footed ferret).

86. Conversations with Service biologists indicate that, on average, there have in recent years been three informal consultations involving the plover on Missouri River bank stabilization proposals per year

within the proposed critical habitat area.

3.3.3 Anticipated Future Consultations Involving the Piping Plover

87. **Nelson Reservoir** - The primary historical threat to the piping plover on Nelson Reservoir has been operations of the reservoir within the larger Milk River Irrigation Project. In 1990, a formal consultation between the Service and the Bureau of Reclamation was completed on the operation of Nelson Reservoir and its impacts on plovers as well as five other listed species. The plover was the only species for which there was a "may affect" determination in this consultation.[11] Subsequent to the 1990 Biological Opinion on operations at Nelson Reservoir, the Service and the Great Plains Region of the Bureau of Reclamation drafted a Memorandum of Understanding (MOU) concerning operations on the reservoir, and their impacts on the piping plover.[12] This MOU outlined procedures to minimize the chance that future operations at the reservoir would impact nesting plovers. In addition to the formal consultation on operations at Nelson Reservoir, informal consultations with the Bureau of Reclamation have occurred on piping plover habitat enhancement activities.

88. Because of the existence of a Memorandum of Understanding regarding Nelson Reservoir operations and their impact on the plover, it is estimated that any future consultations involving the piping plover will be related to relatively minor activities within the unit, such as plover habitat enhancement. It is estimated that over the next ten years, two informal consultations involving the piping plover will occur within these Montana habitats.

89. Because the Biological Opinion on operations of Nelson Reservoir did not explicitly include consideration of piping plover critical habitat, it is likely that the Formal consultation on reservoir operations will need to be reinitiated. Possible effects of this re-initiation include limited impacts on habitat enhancement activities, as well as possible limited grazing restrictions surrounding plover nesting sites.[13]

90. **Bowdoin NWR** - As a national wildlife refuge managed and controlled by the Service, it is estimated that any future consultation activity related to the piping plover will be limited to informal, internal

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[11] *Biological Opinion - Operation of the Milk River Project*. U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement, Helena, MT. November 2, 1990.

[12] *Memorandum of Understanding Concerning Cooperation and Management of Nelson Reservoir for the Conservation of the Threatened Piping Plover*. Draft MOU. U.S. Fish and Wildlife Service, Ecological Services, Billings, MT. November, 1994. 7 pp.

[13] Personal Communication, Wildlife Biologist, USFWS, Billings Field Office. October 3, 2001.

consultations within the service.

91. **Fort Peck Reservoir** - As in the case of Bowdoin NWR, for Fort Peck Reservoir within the C.M. Russell NWR, it is estimated that any future consultation activity related to the piping plover will be limited to informal, internal consultations within the service.

92. **Missouri River below Fort Peck** - Based on the recent history of informal consultations involving streambank stabilization along portions of the Missouri River, it is estimated that there will be an average of three informal consultations per year along this reach involving the piping plover.

3.3.4 Estimated Future Plover Consultations Due to Critical Habitat

93. The history of consultations involving the piping plover on Nelson Reservoir and the Missouri River below Fort Peck Dam indicates that the Service has long been aware of the presence of the plover, and has actively consulted on activities impacting the species. In the case of Nelson Reservoir, however, the 1990 consultation involving the plover will likely need to be reinitiated following designation of critical habitat to address specific habitat concerns for the species. It is estimated that this re-initiation will be the only foreseeable future consultation directly attributable to critical habitat for the piping plover. Possible effects of this re-initiation include limited impacts on habitat enhancement activities, as well as possible limited grazing restrictions surrounding plover nesting sites.

3.4 Montana and North Dakota Alkali Lakes

3.4.1 Current Land Uses

94. One unit in Montana and seven units in North Dakota containing alkali lakes and wetlands have been proposed for inclusion in the plover critical habitat. Land use around the majority of alkali lakes is pasture (grazing) and hayland. A small number of alkali lakes are surrounded by cropland. The soils near alkali lakes are very poor and unproductive, and ranchers and farmers have little incentive to drain alkali lakes and convert native prairie next to alkali lakes for crop production purposes. Very few conflicts have occurred between ranching and farming and piping plovers.

95. Current or future activities within these alkali lake units that might include a federal nexus involving the plover or its critical habitat are largely confined to the agricultural activities found on the lands surrounding the lakes and wetlands (grazing, haying, water source development, pesticide spraying, and potentially drainage and conversion of alkali lakes to farmland). Additionally, limited instances of oil or gas exploration are possible in these habitat areas.

3.4.2 Consultation History

96. A review of the consultation history on all species in North Dakota is presented in Exhibit 3-1. Of the formal consultations within the state since 1991, a number have involved the piping plover. All of these formal consultations, however, also included consideration of other listed species such as the least tern, the pallid sturgeon, and the bald eagle.

97. The data presented in Exhibit 3-1 includes past consultation activities involving the North Dakota Missouri River piping plover habitat as well as North Dakota alkali lake plover habitat. The Missouri River/reservoir habitat for the species will be discussed below (Section 3.5). While no exact count of the number of past consultations involving the piping plover could be developed by the North Dakota Field Office of the Service, personnel from the Bismark Field Office estimate that one percent of all informal consultations involving North Dakota involve the plover on alkali lake habitat within the state.

98. In Montana, no formal tabulation of past consultation activity involving the plover on alkali wetland habitat has been developed. Conversations with Service biologists in the state, however, indicate that past consultation activity has been generally limited to proposed oil and gas drilling in plover habitat areas. Service personnel indicate that fewer than five such consultations have occurred over the last decade.[14]

[14] Personal Communication, Wildlife Biologist, USFWS, Billings Field Office. October 3, 2001.

Exhibit 3-1 North Dakota Consultation History (1991-2000, all species)				
Year	**Informal Consultations**	**Formal Consultations (agencies involved)**	**Estimated Alkali Lakes Informal Consultations[b]**	**Estimated Missouri River Informal Consultations[a]**
1991	42	5 -	0	4
1992	300	0 -	3	30
1993	150	2 -(APHIS, NRCS)	2	15
1994	110	4 -(COE, USFS, APHIS)	1	11
1995	329	4 -(EPA, APHIS)	3	33
1996	--	1 -(APHIS)	--	--
1997	151	2 -(Canadian Pacific Railway, APHIS)	2	15
1998[c]	1338	3 -(APHIS)	13	133
1999	1100	3 -(BR, APHIS)	11	110
2000	3906	5 -(COE, APHIS)	39	390

Note: APHIS (Animal and Plant Health and Inspection Service), NRCS (Natural Resource Conservation Service), COE (Corps of Engineers), USFS (U.S. Forest Service), EPA (Environmental Protection Agency), and BR (Bureau of Reclamation)

[a] The Service estimates that 10 percent of all North Dakota informal consultations involve the Missouri River.

[b] The Service estimates that 1 percent of all North Dakota informal consultations involve alkali lakes and the piping plover.

[c] The increase in informal consultations after 1997 is attributable primarily to better accounting rather than an actual major increase in consultations.

3.4.3 Anticipated Future Consultations Involving the Piping Plover

99. As noted previously, one unit in Montana and seven units in North Dakota containing alkali lakes and wetlands have been proposed for inclusion in the plover critical habitat. Land use around the majority of alkali lakes is pasture (grazing) and hayland. The alkali lake habitat is the only proposed critical habitat for the piping plover that is not occupied by another federally listed species. Consultation records indicate that the Service has actively consulted on activities potentially impacting the piping plover throughout the past decade (Exhibit 3.1).

100. In an effort to inform landholders with holdings including or contiguous to the proposed critical habitat containing the alkali lakes, the North Dakota Field Office of the Service sent approximately 425 letters to these landowners. The letters explained the proposed designation and invited landowners to call or

write the Service to express their concerns or to ask any questions regarding the designation. The Service received only a small number of calls in response to the mailing.[15]

101. In addition to the predominately agricultural uses surrounding the alkali lake habitat, two possible non-agricultural activities present the possibility of triggering consultations in the future are oil exploration and salt mining. Consultations on these activities in plover habitat in North Dakota have not occurred in the past, due to the activities not occurring within plover habitat in the period since the listing of the species. In Montana, however, a small number of informal consultations involving oil and gas drilling in alkali habitat have occurred in recent years. Conversations with Service personnel in North Dakota, however, indicate that the Service has received an inquiry as to the impact of critical habitat designation for the plover on potential oil exploration within the area.[16]

102. Salt mining has occurred in the past on alkali lakes in North Dakota, however, at the present time the Service knows of no proposals to mine salt within areas proposed for plover critical habitat.[17]

103. Based on the history of consultations within North Dakota on piping plovers within alkali lake habitat, it is estimated that the number of annual future informal consultations will reflect the average number of informal consultations experienced over the past three years (i.e., 21 informal consultations per year). Additionally, it is estimated that an average of one formal consultation per year will occur over the next decade involving the piping plover on alkali lake habitat within North Dakota. Conversations with biologists from the North Dakota Field Office indicate that almost all informal consultations involving the plover entail simply reviewing a contact letter explaining the proposed activity and returning the letter with a determination of no significant impact. This simple procedure is generally possible since most activities surrounding plover habitat on alkali lakes are compatible with species protection.

104. Within Montana alkali wetland habitat, it is estimated that an average of two informal consultations per year on proposed oil and gas drilling will involve the piping plover and its habitat. Estimates of costs associated with piping plover consultations on alkali lake habitat are presented in Exhibits 3-3 and 3-4.

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[15] Personal Communication, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service, Bismarck, ND, May 14, 2001.

[16] Telephone Log Sheet, U.S. Fish and Wildlife Service, Ecological Services, Bismarck, ND. May 7, 2001.

[17] Personal Communication, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service, Bismarck, ND. May 17, 2001.

3.4.4 Estimated Future Plover Consultations Due to Critical Habitat

105. Based on the consultation history for the plover in the proposed alkali lakes areas, as well as conversations with Service personnel in North Dakota and Montana, National Resources Conservation Service (NRCS) personnel familiar with the plover and past consultations involving the plover, and responses from landowners within the proposed alkali lakes units, it is expected that designation of critical habitat for the plover will trigger no new consultation activity over the baseline. While future consultations within these units may take a somewhat different form due to the inclusion of critical habitat in the consultation process, none of the parties contacted expected a significant increase in the complexity or costs associated with plover consultations as a result of critical habitat designation in the areas.

106. Contacts with the primary federal agency sponsoring activities in the alkali lake area supported this conclusion of no significant impact from critical habitat designation for the plover. Conversations with NRCS personnel in North Dakota indicate that NRCS expects no increase in the number of consultations involving the piping plover as a result of critical habitat designation.[18] Several factors contribute to this conclusion. The primary land uses in areas including or contiguous to the proposed critical habitat areas are grazing and raising hay. These activities are generally either compatible or beneficial to the plover and its habitat. On the other hand, potential activities that might negatively impact the plover and its habitat (such as draining the lakes and converting them to cropland, or developing stockwatering facilities near the lakes) are unlikely to occur due to the characteristics of the land. The soils near alkali lakes are very poor and unproductive, and ranchers and farmers have little incentive to drain alkali lakes and convert native prairie next to alkali lakes for crop production purposes. Additionally, the water in the lakes is of very poor quality and generally unsuited to use as a livestock water source.

3.5 Missouri River Units (North Dakota, South Dakota, and Nebraska)

3.5.1 Current Land Uses

107. The Missouri River is a large, diverse, and heavily used resource within the four-state area. Current and potential future uses that might involve a federal nexus to the plover and its critical habitat are numerous. Below is a matrix of current uses of the river and its reservoirs, and the federal agencies involved in authorizing, funding, or permitting the use.

[18] Personal Communication, NRCS Agent, Bismarck, ND, May 16, 2001.

Matrix of Current Missouri River and Reservoir Uses and Authorizing Federal Agencies								
Current Uses	Federal Action Agency							
	COE	USFWS	HUD	BIA	NPS	BR	FH	EPA
Boat ramps	X	X						
Utility crossings	X							
Bank stabilization	X							
Dam maintenance and repair	X							
Residential and commercial activities	X		X	X				
Recreational development	X	X	X	X	X			
Recreational activities	X		X	X				
Irrigation intakes	X			X		X		
Water pipeline and intakes	X		X	X		X		
Bridges	X						X	
Operations of the Missouri River	X							
Agricultural spraying								X
Grazing	X			X				
National wildlife refuge activities (Charles M. Russell NWR)	X	X						
National wildlife refuge activities (Karl Mundt NWR)	X	X						
Management of the Missouri National Recreational River					X			
Note: COE (Corps of Engineers), USFWS (Service), HUD (Housing and Urban Development), BIA (Bureau of Indian Affairs), NPS (National Park Service), BR (Bureau of Reclamation), FHA (Federal Highway Administration), and EPA (Environmental Protection Agency)								

3.5.2 Consultation History

108. Exhibit 3-2 shows the consultation history for the piping plover in the state of South Dakota. Additionally, Exhibit 3-1, above, shows information on the Missouri R. consultation history in North Dakota relative to the piping plover. As Exhibit 3-2 shows, there have been between 65 and 154 informal and between zero and four formal consultations involving the piping plover each year in South Dakota since 1990. Conversations with Service biologists from South Dakota indicate that all of these consultations have included species in addition to the plover. The least tern is found throughout the plover habitat in the state. Additionally, the pallid sturgeon, and the bald eagle are both routinely

consulted on in addition to the plover.[19]

Exhibit 3-2
South Dakota Consultation History (1990-2000)

Year	Informal consultations (all species)	Formal consultations (piping plover)	Estimated Informal consultations involving the Missouri R. and the Piping Plover[a]
1990	371	3	74
1991	444	1	89
1992	365	2	73
1993	423	0	85
1994	~	~	~
1995	600	3[b]	120
1996	~	~	~
1997	~	~	~
1998	771	0	154
1999	325	2[b]	65
2000	354	0	71
Total	3,653	11	731

~ No information available
[a] Estimate 20 percent of all South Dakota informal consultations involved the Missouri River and piping plovers.
[b] represents all formal consultation in this year.

3.5.3 Anticipated Future Consultations Involving the Piping Plover

109. Estimates of the total number of consultations involving the piping plover within proposed Missouri River critical habitat over the next 10 years were derived from the recent consultation history for the species within the Missouri River habitat areas.

Missouri River Habitat in North Dakota

110. Within the North Dakota Missouri River habitat there have been an estimated average 211 informal

[19] Personal Communication, Endangered Species Biologist, South Dakota Ecological Services Field Office, USFWS, Pierre, SD. May 15, 2001.

consultations involving the species each year over the past three years (Exhibit 3-1). Additionally, there have been between three and five formal consultations per year involving the species within the Missouri River habitat in North Dakota in the same time period. Based on this recent consultation history, it is estimated that an average of 211 informal consultations and four formal consultations involving the piping plover per year will occur over the next 10 years within North Dakota Missouri River and reservoir habitat.

Missouri River Habitat in South Dakota (and SD-NE border)

111. Exhibit 3-3 shows that within the South Dakota portions of the Missouri River habitat for the piping plover there have been between zero and two formal consultations and between 65 and 154 informal consultations involving the piping plover over the most recent three years. Based on this information, and considering the opinion of Service personnel from the Pierre, South Dakota Field Office that this recent past should provide a good estimate of activity going forward, it is estimated that an average of one formal and 97 informal consultations involving the piping plover will occur per year over the next decade within the South Dakota portions of the designated critical habitat. Conversations with Service personnel indicate that the large majority of these anticipated future consultations (as well as past informal consultation activity) involves only review of relatively simple proposal letters (for activities such as water intakes, or private boat docks) which are largely returned with a determination of no significant impact.[20]

112. A discussion of the consultation and project mitigation costs associated with these anticipated future consultations is included in Section 3.7.

3.5.4 Estimated Future Plover Consultations Due to Critical Habitat

Missouri River Habitat in North Dakota

113. The consultation history shows that the Service in North Dakota has actively consulted on activities impacting listed species within the Missouri River corridor. The piping plover is considered to occupy the proposed critical habitat units within this reach of the river, and thus the Service in North Dakota has a history of actively consulting on the species. Conversations with Fish and Wildlife Biologists from North Dakota indicate that two factors significantly limit the potential for critical habitat designation for the plover to trigger new consultations above those already engaged in under the listing provisions of the Act. First, the presence of other listed species raises the baseline level of scrutiny

[20] Personal Communication, Endangered Species Biologist, South Dakota Ecological Services Field Office, USFWS, Pierre, SD. September 18, 2001.

applied to activities in these areas. Between 1990 and the present, all formal consultations in North Dakota involving the piping plover have also involved other listed species (primarily the least tern, bald eagle, and pallid sturgeon).[21] At least one other listed species (the least tern) shares habitat with similar primary constituent elements to those of piping plover habitat. The involvement of listed species other than the piping plover in consultations within these units indicates that, even in the absence of critical habitat for the plover, the myriad of other endangered species concerns in the river corridor leads to consultations on activities potentially impacting the plover and its habitat. Designation of critical habitat for the species is unlikely to change the level of consultation activity already occurring.

114. The primary Federal agency involved in operations and permitting along the river corridor is the U.S. Army Corps of Engineers. Conversations with representatives of the Corps support the conclusion that critical habitat designation for the piping plover within this river reach will not lead to new consultation activity above that which would be experienced in the baseline. The Corps indicates that they are fully cognizant of listed species such as the piping plover and the least tern and their dependence on shoreline and sandbar breeding habitat. The Army Corps of Engineers considers all sandbars within this area as "undesignated wetlands" and treats them as special aquatic sites that are afforded special protection.[22] Additionally, the Corps has completed extensive formal consultations on operations of Missouri River Reservoirs and their impacts on listed species, including the piping plover. The existing level of scrutiny which the Corps gives proposed projects within this river reach that might impact listed species and their habitats is relatively high in the baseline. The designation of critical habitat for the piping plover is unlikely to afford any additional protection or restrictions above that existing in the baseline.

115. This conclusion is also supported by conversations with the Army Corps of Engineers (COE) Endangered Species Biologist. Conversations with the COE biologist indicate that the COE expects no increase in the number of consultations and no substantial increase in the complexity of future consultations involving the COE throughout the entire critical habitat designation for the piping plover as a result of critical habitat.[23]

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[21] Personal Communication, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service, Ecological Services, Bismarck, ND. May 15, 2001.

[22] Personal Communication, Permitting Supervisor, U.S. Army Corps of Engineers. Bismarck, ND. May 17, 2001.

[23] Personal Communication, Endangered Species Biologist, U.S. Army Corps of Engineers, Omaha District, Yankton, SD. May 16, 2001.

116. In summary, the baseline level of oversight on activities potentially impacting the piping plover is quite high throughout the North Dakota reaches of the proposed Missouri River critical habitat units. This high level of baseline regulation is attributable to several factors:

1. The units are occupied by the piping plover, therefore consultations on activities impacting the species have been occurring regularly in the baseline.

2. Several other Federally listed species are found in or near the usual habitat for the piping plover, and share some of the primary constituent elements for the plover, and these species have been actively consulted on in the past.

3. The primary Federal agency (Corps) is aware and concerned with the habitat needs of listed species in the area, including the piping plover, and have a history of consulting on these species.

117. Because of this high level of baseline regulation and awareness within the proposed critical habitat units in North Dakota for the piping plover, it is estimated that designation of critical habitat for the species in these units will not lead to any additional consultations on the species, and will lead to a marginal, but minimal increase in the complexity of future consultations involving the species.

Missouri River Habitat in South Dakota (and SD-NE border)

118. The two reaches of the Missouri River in South Dakota proposed for piping plover critical habitat extend from the river mile 1232.0 to river mile 1072.3 and from river mile 957.5 to river mile 752.2 near Ponca, Nebraska. Within the South Dakota portion of these two proposed critical habitat units, the Federal government owns all shorelines up to the ordinary high water-mark. Along the 120 miles of river that borders both South Dakota and Nebraska, ownership of islands and sandbars is shared with adjacent private landowners in Nebraska.

119. The consultation history shows that the Service in South Dakota has actively consulted on activities impacting listed species within the Missouri River corridor. The piping plover is considered to occupy one of the proposed critical habitat units within this reach of the river (Unit SD-1, Lake Oahe), and a portion of the other proposed unit (Lake Francis Case) is currently unoccupied (the remainder of Unit SD-2 is considered occupied by the plover). As was the case in the Montana and North Dakota proposed plover critical habitat, the Service in South Dakota has a history of actively consulting on the species. Conversations with Fish and Wildlife Biologists from South Dakota indicate that two factors significantly limit the potential for critical habitat designation for the plover to trigger new consultations above those already engaged in under the listing provisions of the Act. The presence of other listed species within the proposed critical habitat units raises the baseline level of scrutiny applied to activities

in these areas. Between 1990 and the present all formal and informal consultations in South Dakota involving the piping plover have also involved other listed species (primarily the least tern, bald eagle, and pallid sturgeon).[24] The involvement of listed species other than the piping plover in consultations within these units indicates that even in the absence of critical habitat for the plover the other endangered species concerns in the river corridor leads to consultations on activities potentially impacting the plover and its habitat. Designation of critical habitat for the species is unlikely to change the level of consultation activity already occurring.

120. As in North Dakota, the primary Federal agency involved in operations and permitting along the river corridor is the U.S. Army Corps of Engineers. As noted above, conversations with representatives of the Corps confirm the expectation by Service personnel that critical habitat designation for the piping plover within this river reach will not lead to new consultation activity above that which would be experienced in the baseline. The Corps indicates that they are fully cognizant of listed species such as the piping plover and the least tern and their dependence on shoreline and sandbar breeding habitat. The Army Corps of Engineers considers all sandbars within this area as "un-designated wetlands" and treats them as special aquatic sites that are afforded special protection.[25] Additionally, the Corps has completed extensive formal consultations on operations of Missouri River Reservoirs and their impacts on listed species, including the piping plover. The existing level of scrutiny which the Corps gives proposed projects within this river reach that might impact listed species and their habitats is relatively high in the baseline. The designation of critical habitat for the piping plover is unlikely to afford any additional protection or restrictions above that existing in the baseline.

121. Thus, throughout the South Dakota reaches of the proposed Missouri River critical habitat units, the baseline level of oversight on activities potentially impacting the piping plover is quite high. This high level of baseline regulation is attributable to several factors:

1. Unit SD-1 is occupied by the piping plover, and a significant portion of Unit SD-2 is considered occupied, and consultations on activities impacting the species have been occurring regularly in the baseline.

2. Several other Federally listed species are found in or near the usual habitat for the piping plover, and these species have been actively consulted on in the past. Additionally, in the past all consultations involving the plover have also involved other listed species.

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[24] Personal Communication, Endangered Species Biologist, U.S. Fish and Wildlife Service, South Dakota Ecological Services Field Office, Pierre, SD. May 16, 2001.

[25] Personal Communication, Permitting Supervisor, U.S. Army Corps of Engineers, Pierre, SD. May 17, 2001.

3. The primary Federal agency (Corps) are aware and concerned with the habitat needs of listed species in the area, including the piping plover, and have a history of consulting on these species.

122. Because of this high level of baseline regulation and awareness within the proposed critical habitat units in South Dakota for the piping plover, it is estimated that designation of critical habitat for the species in these units will not lead to any additional consultations on the species, and will lead to a marginal, but minimal increase in the complexity of future consultations involving the species.

Lake Francis Case (unoccupied portion of Unit SD-2)

123. The conclusion that critical habitat designation will not lead to new consultations on the piping plover is particularly strong in the case of the occupied portions of the Missouri River units. In the case of the one currently unoccupied portion of proposed Unit SD-2, Lake Francis Case, however, the specifics associated with the baseline regulations and scrutiny surrounding the piping plover suggest that inclusion of this river reach in the critical habitat designation may trigger additional consultations above the baseline level.

124. The level of activity potentially triggering a consultation involving the piping plover in the Lake Francis Case portion of the proposed unit is quite low in the baseline. (The Army Corps of Engineers in South Dakota estimates that fewer than six minor activities involving Corps permitting occur each year.)[26] These activities almost exclusively include existing recreation access areas or minor irrigation water intakes. It is estimated that this average number of activities will continue over the next decade and will lead to an average of six informal consultations on minor reservoir activities per year within the Lake Francis Case critical habitat unit. This estimate is likely to provide an upper bound to consultation activity involving the plover within this unit because all past consultations involving the piping plover in South Dakota have also involved other listed species. Any possible future consultations in the Lake Francis Case section of the proposed critical habitat could also be expected to involve multiple species (some of which share the same critical habitat primary constituent elements as the plover), and therefore would occur even in the absence of plover critical habitat designation.

125. Overall, it is estimated that designation of critical habitat for the piping plover within the two South Dakota units will lead to six additional consultations per year above those that would exist in the

[26] Personal Communication, Permitting Supervisor, U.S. Army Corps of Engineers, Pierre, SD. May 17, 2001.

baseline. Detail on the anticipated costs associated with these anticipated future consultations is presented below in Section 3.7.

3.6 Nebraska Rivers

3.6.1 Current Land Uses

126. The unit of proposed critical habitat within the state of Nebraska includes portions of the Platte, Loup, and Niobrara Rivers. Like the Missouri River units, a wide spectrum of activities takes place on the over 400 miles of river and shoreline contained in this proposed plover critical habitat unit. Below is a listing of past, current, and potential future activities within this unit that could impact the proposed habitat for the plover along with the federal action agencies involved in permitting, licensing, or authorizing the activities.

Matrix of Current Nebraska River Uses and Authorizing Federal Agencies

Current Uses	Federal Action Agency							
	COE	USFWS	HUD	NRCS	NPS	BR	RE	FERC
Agricultural practices including row crops, haying, and grazing				X				
Sand and gravel mining	X							
Flood control levees	X							
Municipal well fields	X		X					
Recreational activities					X			
Residential, in floodplain, especially along the Lower Platte			X					
Hydroelectric power plants							X	X
Water diversion for agriculture				X		X		
Conservation practices on land in/adjacent to channel		X		X				
Bridge crossings	X							
Power and other utility lines	X						X	

Note: COE (Corps of Engineers), USFWS (Service), HUD (Housing and Urban Development),NRCS (Natural Resources and Conservation Service, NPS (National Park Service), BR (Bureau of Reclamation), REA (Rural Electrification Administration, FERC (Federal Energy Regulatory Commission.

3.6.2 Consultation History

127. A review of the consultation history for the piping plover in Nebraska shows that while there were a significant number of consultations (both formal and informal) within the state that included the piping plover, all of these consultations included species other than the plover.[27] Additionally, approximately one-third of informal and 65 percent of formal consultations involved activities in areas already designated as critical habitat for the whooping crane. Between 1990 and 2000 there were 51 formal consultations involving the plover. All 51 of these consultations also involved other listed species, and 33 involved designated whooping crane critical habitat. The primary activities triggering the consultations in Nebraska involving piping plovers were sand and gravel mining operations, water depletions, bank stabilization, levee construction, and water well fields. During the same period, there were 418 informal consultations involving the plover in Nebraska. All of these consultations also included other listed species.

3.6.3 Anticipated Future Consultations Involving the Piping Plover

128. One critical habitat unit for the piping plover has been proposed within the state of Nebraska. This unit includes portions of the Platte, Loup, and Niobrara Rivers. As is the case in South Dakota, the Service has been actively consulting on activities involving the piping plover over the past decade. Also, as in South Dakota, all consultations involving the plover have been multi-species consultations. One federally listed species that occupies much the same shoreline and sandbar habitat as the piping plover is the least tern. Service personnel in Nebraska indicate that all past consultations involving the piping plover in the state have also involved consulting on the least tern.[28]

129. In addition to the active history of multi-species consultations involving the piping plover in Nebraska, all three rivers proposed as plover critical habitat within the state are occupied by the species, and provide essential habitat for the species. Additionally, a portion of the proposed critical habitat area for the plover on the Platte River is also included in a separate critical habitat designation for the endangered whooping crane**.**

130. Based on the past consultation activity involving the piping plover within the proposed Nebraska critical habitat unit, it is estimated that, as in the recent past, an average of five formal consultations involving the plover will occur each year over the next decade. Additionally, it is estimated that 38

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[27] Personal Communication, Section 7 consultation coordinator, Nebraska Field Office, USFWS, Grand Island, NE, May 16, 2001

[28] Personal Communication, Listing, Recovery, and Section 7 Coordinator, U.S. Fish and Wildlife Service, Nebraska Field Office, Grand Is., NE. May 17, 2001.

informal consultations involving the species will occur each year in the state over the next decade.

3.6.4 Estimated Future Plover Consultations Due to Critical Habitat

131. It is estimated that, due to the relatively high level of baseline scrutiny and protection the piping plover has received in the past, there will likely be no marginal change in future consultations involving the piping plover or its critical habitat within the proposed Nebraska unit. Factors supporting this conclusion include: 1) the plover occupies all three river segments proposed as critical habitat, 2) the Service has actively consulted on activities involving the piping plover in the past, 3) all past consultations involving the plover have also included other listed species such as the least tern (which shares many of the primary constituent elements of critical habitat with the plover), and 4) certain portions of the proposed Nebraska critical habitat units already are designated as critical habitat for the endangered whooping crane.

3.7 Summary of Estimated Economic Impacts from Critical Habitat Designation for the Piping Plover

132. Designation of critical habitat for the northern Great Plains breeding population of the piping plover has been proposed in an area and regulatory environment of relatively high baseline protection for the species. As discussed above, a combination of several factors existing in the baseline lessen the likelihood that critical habitat designation for the plover will significantly increase the degree of oversight and protection of the species and its habitat. These factors include: 1) the recovery plan for the piping plover already lists a majority of the proposed critical habitat areas as essential habitat for the recovery of the species, 2) the Service in all states included in the critical habitat proposal (except Minnesota) has been actively consulting on the plover and its habitat in the past, 3) excluding the alkali lakes units, all consultations involving the plover have also included other listed species, and 4) Federal agency representatives most likely to be involved in future plover consultations state that the marginal impact of critical habitat designation for the piping plover will be negligible to minimal.

133. While few additional consultations resulting from critical habitat designation are expected, the structure of future consultations might change marginally. The overall opinion of those officials contacted was that consultations following the critical habitat designation would involve somewhat different approaches, but little additional work. Because of the expectation by representatives of both the Service and consulting Federal agencies that the marginal change in complexity and associated cost will be very small, this possible marginal increase is noted, but not quantified in this analysis. This result is detailed in Exhibit 3-3.

134. Estimates of future baseline and critical habitat related consultations are summarized in the remainder of this section and tabulated in Exhibit 3-3.

3.7.1 Summary of Estimates of the Number of Baseline and Critical Habitat Related Consultations

135. Exhibit 3-3 shows the estimated levels of both all plover-related and all critical habitat caused consultations expected over the next decade. These estimates are based on an examination of the consultation history for the species in recent years as well as on information collected regarding expectations for future activity in the critical habitat areas. In general, recent consultation trends are expected to continue into the future as most of the areas proposed for designation as critical habitat for the plover have not evidenced, and are not likely to show, significant population or economic growth. Estimates of future consultations that will be generated by critical habitat designation are based on the degree to which the Service has been consulting on the plover in recent years as well as any information suggesting that consultation activity will increase following critical habitat designation. The following is a brief summary of the information supporting the consultation estimates in Exhibit 3-3.

136. ***Minnesota (Lake of the Woods)*** While this unit has had 15 consultations in recent years, none have involved the plover. Since the 235 acres of proposed critical habitat for the plover in this unit represents an extremely small share of the total county habitat area where the past consultations occurred, it is not expected that these 15 consultations will need to be reinitiated to consider the plover. Due to a lack of consultation history on the plover, however, it is estimated that the two future Federal activities identified in the analysis potentially affecting the plover habitat will trigger new consultations attributable to the critical habitat designation.

137. ***Montana Refuges, Reservoirs, and Missouri River*** In Montana, the Service has a record of consulting on activities that affect the piping plover and its habitat. In the case of Nelson Reservoir, the Service has executed a Memorandum of Understanding on reservoir operations in order to protect the plover and its nesting sites. It is likely that the formal consultation underlying this MOU will need to be reinitiated to explicitly consider habitat needs of the plover. It is further estimated that an additional two consultations on the species will occur over the next 10 years. Due to the record of consultation on the species within these areas, this analysis concludes that neither of these two new consultations will be attributable to critical habitat designation.

Exhibit 3-3
Annual Estimated Future Consultations Involving the Northern Great Plains Breeding Population of the Piping Plover

Habitat / State	Estimated Annual Number of Future Plover Consultations	Annual Number of New or Reinitiated Consultations Due to Plover Critical Habitat	Expected increase in complexity of baseline consultations due to critical habitat
Minnesota (Lake of the Woods)	2 formal[1]	2 formal[1]	none
Nelson Reservoir, Bowdoin & C.M. Russell NWR & Missouri River	2 formal[1] 3 informal	1 formal re-initiation	unlikely
North Dakota and Montana Alkali Lakes	1 formal 21 informal	0	minimal
Missouri River-North Dakota	4 formal 211 informal	0	minimal
Missouri River-South Dakota	1 formal 97 informal	6 informal	minimal
Nebraska Rivers	5 formal 38 informal	0	minimal
Total Estimate (per year)	15 formal[2] 370 informal	1 formal[2] 6 informal	--

[1] Minnesota and Montana reservoir and refuge estimates are for entire 10 year future period, not annual estimates.

[2] Includes 2 formal consultations from Minnesota, and Nelson in Montana over the 10 years. Additionally, this estimate includes the one-time reinitiation of the system-wide Missouri River formal consultation with the COE (This annual estimate likely overstates annual impacts, but was used to avoid fractional estimates of consultations)

138. The Bowdoin NWR is run by the Service, and already considers effects on species covered by the Act. Similarly, Fort Peck Reservoir is contained within a NWR and no significant additional plover consultations are expected in the future.

139. In the case of the Missouri River below Fort Peck Dam, it is estimated that, as in recent years, an average of three informal consultations per year will involve the plover. In the past, these consultations have involved proposals for streambank stabilization projects. Due to the history of consultations on these activities, it is not expected that critical habitat will impact these Missouri River consultations.

140. ***North Dakota and Montana Alkali Lakes*** While the administrative record on past consultations involving alkali lakes and wetlands in North Dakota is extensive, no compendium of informal or formal consultations involving the alkali habitat was available for this analysis. Service personnel in Montana describe a record of consultations on the plover in alkali wetlands involving proposals for oil and gas drilling in the area. It is estimated that over the next 10 years there will be one formal and 21 informal consultations per year involving the plover in this habitat in North Dakota. (This is the average consultation rate over the most recent three years.) It is further estimated that in Montana, there will be two informal consultations per year involving the plover in alkali lake habitat over the next 10 years. In the case of both North Dakota and Montana alkali lake habitat, the significant consultation history on the species suggests that no change in plover consultations will occur following critical habitat designation.

141. ***Missouri River - North Dakota*** Service personnel in North Dakota estimate that 10 percent of all informal consultations in the state involve the Missouri River habitat. Additionally, the Service in North Dakota has a history of including the plover and its breeding habitat in consultations. While land uses within the Missouri River habitat in North Dakota are diverse, the COE has management authority over much of the reservoir area and shoreline habitat within the state. The COE has a history of considering the plover and its habitat needs and consulting on activities involving the species.

142. It is estimated that, over the next decade, there will be an average of four formal and 211 informal consultations per year within the Missouri River plover habitat in North Dakota. Because the estimate of future informal consultations is based on informal Missouri River consultations for all species in the past, it likely represents an upper-bound estimate of future plover consultations. Based on the consultation history in North Dakota involving the plover, it is estimated that, while there may be a slight increase in complexity associated with future plover consultations in the state following critical habitat designation, it is unlikely that new plover consultations will arise due to the designation of critical habitat for the plover.

143. ***Missouri River - South Dakota*** As in North Dakota, the Service in South Dakota has a history of consulting on activities that could potentially impact the plover or its breeding habitat. It is estimated that over the next 10 years there will be an average of one formal and 97 informal consultations per year involving the plover within the Missouri River habitat in South Dakota. This estimate represents an average of recent year's consultation activity involving the species.

144. Included in the estimated future informal consultations for the plover in South Dakota are six informal consultations per year expected to occur within the Lake Francis Case reach of the river (a river section currently unoccupied by the species). It is estimated that these six informal consultations per year involving the plover will be attributable to critical habitat designation. The remaining formal and

informal consultations are expected to be a continuation of baseline activity associated with the listed status of the piping plover.

145. ***Nebraska Rivers*** As in the states of North Dakota and South Dakota, the Service in Nebraska has a history of consulting on activities involving the piping plover and plover breeding habitat. It is estimated that over the next 10 years an average of five formal consultations and 38 informal consultations per year will occur involving the piping plover. As in the past, it is anticipated that all of these consultations will involve other listed species in addition to the plover.

146. Based on the strong consultation record involving the plover in Nebraska, it is estimated that all of the future consultation activity involving the plover within the state will be an extension of the baseline protection afforded the plover as a listed species, and not as a result of critical habitat designation (i.e., these consultations will occur regardless of the designation).

3.7.2 Summary of Estimates of Costs Associated with Future Piping Plover Consultations

147. The estimates of future plover-related consultations presented in Exhibit 3-3 represent one step towards estimating costs associated with the listing of the plover and subsequently with designation of critical habitat for the species. While consultations represent administrative actions in response to specific planned activities, they also represent real-world costs to those parties involved in the consultations.

148. Both the type and number of activities that could potentially trigger consultations involving the piping plover is large. A thorough accounting of each expected consultation and associated estimated costs would be extremely speculative and would convey the impression of far more precision than is possible given the scope, uncertainty, and future timing of the consultation and cost estimates. Therefore, the following discussion categorizes the predicted future consultations according to complexity, and assigns cost estimates based on that level of complexity. Three specific future levels of consultation complexity are addressed:

Costs associated with minor, informal consultations,
Costs associated with larger, formal consultations, and
Costs associated with very large scale system-wide consultations.

149. Estimates of the cost of consultations were developed from a review and analysis of historical section 7 files from a number of Service field offices around the country. These files addressed consultations conducted for both listings and critical habitat designations. Cost figures were based on an average level of effort for consultations of similar expected complexity, multiplied by the appropriate labor

rates for staff from the Service and other Federal agencies. These estimates take into consideration the level of effort of the Service, the Action agency, and the applicant during formal consultations, as well as the varying degrees of complexity of consultations. Costs associated with these efforts are based on estimates of administrative effort in issuing a biological opinion, such as time spent in meetings, preparing letters, and making phone calls. The per-consultation cost estimates relied on are mid-range estimates and the full range of unit cost estimates could be one-half to twice of this value.

150. ***Informal Consultation Cost Estimates*** Exhibit 3-3 details a baseline average of 370 informal consultations per year involving the piping plover over the next 10 years. Additionally, it is estimated that six informal consultations will occur due to critical habitat designation for the species. Conversations with Service personnel responsible for conducting these consultations indicate that the large majority of these informal consultations involve only the receipt and return of a contact letter detailing the proposed activity. These letters are most often returned with a "no significant impact" determination and the activity goes forward as planned. While relatively uninvolved, these simple informal consultations are not without cost.

151. A relatively small number of the informal consultations involving the plover over the next decade are expected to be somewhat more complex. An example would be an application for a permit for bank stabilization along the Missouri River. While some bank stabilization consultations are on small-scale proposals by landowners, others involve large development projects, and their associated consultations involve significant regulatory interaction between the Service, the COE, and the private applicant.[29] Considering the very large share of informal consultations involving a simple exchange of letters, it is estimated that each consultation costs a total of $1,531 to the participants (the Service, Federal agency involved, and the private applicant, if applicable, and based on the assumption that 50 percent of the applicants will be a Federal agency and 50 percent will be private applicants).[30] Based on the number of expected plover consultations (Exhibit 3-3) it is estimated that the cost associated with informal consultations involving the piping plover will be approximately $566,000 per year over the next 10 years. Of this amount, it is estimated that approximately $9,000 per year will be directly due to designation of critical habitat for the species. These estimates likely provide an upper-bound to these informal consultation costs associated with the plover due to the fact that a high percentage (over 90 percent) of these consultations are expected to include more than one species. Based on past consultation activity, the share of costs directly attributable to status of the plover could be one third to one half of the estimated level for future baseline consultations.

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[29] US Army Corps of Engineers, Omaha District. "Department of the Army Decision Document: WW Ranch Bank Stabilization Proposal." March 2001.

[30] This amount is the estimated cost associated with a simple consultation with no associated biological survey work.

152. ***Formal Consultation Cost Estimates*** Exhibit 3-3 shows an estimate of 15 formal consultations per year over the next decade due to the existing listed status of the plover, and one additional formal consultations resulting from critical habitat designation for the plover. Assuming a relatively high level of complexity associated with these consultations, it is estimated that each formal consultation will cost approximately $16,300.[31] Given the number of estimated future consultations per year, it is estimated that future annual formal consultation costs will be approximately $245,000 for baseline consultations, and $16,300 for critical habitat related consultations. As in the case of informal consultations (discussed above), these estimates likely provide a high, upper-bound to these informal consultation costs due to the fact that a high percentage of these consultations are expected to include more than one species. Based on past consultation activity, the share of costs directly attributable to status of the plover could be one third to one half of the estimated level for future baseline consultations.

153. ***Missouri River System-wide Consultation Cost Estimates*** The Service completed a system-wide consultation with the COE in 2000 on the operation of the Missouri River dams and reservoirs. This far-ranging consultation considered operations in much of the Missouri River habitat for the piping plover. While the impact of dam operations on reservoir levels and plover breeding habitat was explicitly considered in this consultation, it is possible that, following critical habitat designation for the plover, the consultation would necessarily be reinitiated to ensure all aspects of piping plover critical habitat concerns were addressed. Because of the comprehensive nature of this recent consultation, it is unlikely that re-initiation would approach the complexity of the original consultation. It is estimated, however, that due to the scope of the consultation, re-initiation resulting from critical habitat designation for the plover would cost twice the average formal consultation costs cited above, or $32,600.

154. Overall, this analysis found that over the next 10 years total annual consultation costs associated with activities potentially affecting the piping plover will be $843,600.[32] Of this total, it is estimated that a maximum of approximately $58,000 per year in consultation costs will be due to designation of critical habitat for the piping plover. It is this amount ($58,000) that would be avoided were there no critical habitat designation for the species.

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[31] Based on $7,500 for a biological assessment, and $8,800 for other consultation costs.

[32] Total consultation costs are for all parties involved in the consultations. Of the $843,600 total, approximately 34.5 percent ($291,000) would be costs to the Service, 40.0 percent ($337,500) would be costs to the action agencies, and 25.5 percent ($215,000) would be costs to private applicants.

Exhibit 3-4 Estimated Annual Future Consultation Costs Involving the Northern Great Plains Breeding Population of the Piping Plover		
Consultation/cost category	**Annual Cost Estimates**	
	All Consultations (Including Critical Habitat)	**Only Consultations Due to Critical Habitat Designation**
Consultation costs		
Informal consultations	$566,000	$9,000
Formal consultations	$245,000	$16,300
System-wide COE consultation	$32,600	$32,600
Total Estimate (per year)	$843,600	$57,900
Estimates of average consultation costs are based on Office of Personnel Management, Federal Government Rate Schedules as well as analysis of rate information by Industrial Economics, Incorporated, Cambridge, MA.		

155. The estimated number of consultations and associated costs presented here are suggestive. The actual number of consultations, which may be lower or higher than these estimates, depends on future economic activity within the areas of critical habitat, as well as on individual decisions made by Federal, tribal, state, municipal, and private landowners. In addition, the analytic approach used to derive the estimated number of consultations cannot account for unknown or unforeseen activities and projects. Therefore, the estimates presented here represent reasonable approximations and not firm predictions.

3.7.3. Examples of Possible Mitigation Costs

156. In addition to the costs associated with the consultation process, costs may also arise due to conservation measures suggested by the Service at the conclusion of the consultation. These may include increased costs of completing a project, due to modified designs, or costs associated with delays in project implementation. Some costs may also arise out of changes in ongoing operations of projects (such as federal dams) necessary to protect a species. While only a subset of past consultations involving the plover have included requested conservation or mitigation measures, such measures can impose significant additional costs on projects or operators.

157. Project modifications required by the Service due either to the listed status or the designation of critical habitat for the piping plover will vary on a project-by-project basis, based in part on the activity, size, and scope of the proposed action. A list of project modifications that could be associated with

projects in designated critical habitat areas for the piping plover is presented below. These mitigation and conservation measures represent the actions most likely to be recommended by the Service based on past consultation activity and information on future levels of planned activities within the critical habitat area.

158. ***Platte River Minor Water Depletion*** For minor water depletion applications (less than 25 acre feet), the Service and COE have a standard formula used to calculate the amount of money the applicant must pay into a conservation fund in order to offset the effects of water depletion on the impacted species in the area. Most commonly these depletions are in the 5-10 acre foot range, and the one-time cost to the applicant for the conservation fund is between $500 and $1,000. At the extreme, the conservation fund cost to the applicant asking to withdraw 25 acre feet of water from the system could be approximately $4,000.[33] This payment-based conservation measure is used extensively in conjunction with plover consultations in the Platte River Basin to both minimize cumulative impacts of water depletion on listed species, and to streamline the consultation process for applicants through the use of standardized formulas.

159. ***SANDBAR Habitat Program*** A somewhat more costly conservation measure might be habitat development or improvement associated with a proposal for bank stabilization along the Missouri River. Such habitat work might involve either creating or improving shore or sandbar habitat for terns and plovers near the stabilization project.[34] While the relatively inexpensive mitigation measures associated with minor water depletion consultations in Nebraska are common, relatively costly mitigation associated with habitat creation is very rare. For example, a review of applications for bank stabilization permits in North Dakota since 1995 showed that of 24 permit applications, in only one case was habitat mitigation requested by the Service.[35] An estimate by the applicant of the cost associated with this habitat restoration was on the order of $100,000.[36] This is likely the upper end mitigation cost for a large scale bank stabilization project.

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[33] Personal communication, Biologist, USFWS, Nebraska Field Office, Grand Island, NE. October 2, 2001.

[34] The SANDBAR Management Plan (Special Aquatics Needing Development Boosting Avian Recovery) may require applicants to create or enhance a shallow or backwater area, or off-channel chute, having the mitigation goal of establishing the physical conditions necessary for nesting, brood-rearing, and foraging habitat for terns and plovers.

[35] Personal communication, Biologist, USFWS, Bismark, ND Field Office. October 2, 2001.

[36] Personal communication, Biologist, USFWS, Bismark, ND Field Office. October 2, 2001. Based on statements made by the applicant at public hearing.

160. Based on the history of consultations involving the plover and on information regarding potential large-scale bank stabilization projects along the Missouri River in the future, it is estimated that over the next 10 years there may be two consultations involving proposed bank stabilization and recommended mitigation measures per year within the critical habitat area.

161. ***Municipal Levy Project*** A special case of bank stabilization might exist if a state or municipality proposed to construct a large levy within the plover critical habitat area. At least one such proposal has occurred in Nebraska. In this case the Service suggested conservation measures similar to those used in the SANDBAR project: construction of river chutes for plover breeding habitat as well as construction of a sand pit adjacent to the river for habitat. The costs associated with this type of habitat enhancement or development varies from project to project, depending on the scope of the recommended mitigation actions.

162. ***Boat Ramps*** In recent years, along the Missouri River, there have been a significant number of boat ramps constructed by states, municipalities, the COE or others. While the Service has reviewed these projects in the past, conservation measures have been limited to asking the dock owners to post informational signs on listed species in the area, and their nesting habitat.[37] The posting of these signs likely present a minimal cost to applicants.

163. ***Highway Bridge Construction*** Replacement or upgrading of existing bridges across the Missouri or other Nebraska rivers is unlikely to either impact plover breeding grounds or necessitate associated mitigation measures. Construction of new bridges, however, possibly could impact the plover and its habitat. At present, Service personnel within the states containing proposed critical habitat are aware of only one possible new bridge with the potential to impact the species. Because of the small footprint of a bridge, however, mitigation would likely be limited to scheduling work during non-critical times for the breeding birds.

164. ***Oil and Gas Development*** The Service in Montana has reviewed a handful of proposals to drill for oil or gas within potential plover habitat in the alkali wetlands portion of the Montana critical habitat designation. To date, no mitigation or conservation actions have been recommended by the Service related to these actions. Were a specific conflict between the proposed action and the plover or its critical habitat to occur, possible mitigation might involve modifications in locations of access roads or drilling platforms. Done at the review stage of the project, these minor changes would likely represent very small marginal changes in overall drilling and development costs for the wells. As noted, to date

[37] Personal Communication, Endangered Species Biologist, U.S. Fish and Wildlife Service, South Dakota Ecological Services Field Office, Pierre, SD. Oct. 2, 2001.

no such mitigation measures have been recommended by the Service associated with these activities.[38]

165. ***Mitigation Costs Associated with System-wide Missouri River Consultation*** While a system-wide consultation on operations of the Missouri River dams and reservoirs was conducted in 2000, the impacts of any mitigation actions adopted to protect endangered species will be felt for years into the future. At the time of this analysis, the degree to which the reasonable and prudent measures suggested by the Service during the consultation will be adopted by the COE is unknown. What is clear, however, is that any modifications to the operations of dams and reservoirs on the Missouri River system have the potential to have significant economic impacts. These impacts may include, but are not limited to, impacts on value of electrical generation, impacts on downstream navigation, and impacts on recreation throughout the system. However, while altering flow regimes to protect endangered species might impose economic costs on some Missouri River users, other users might benefit. For example, retaining more water higher in the river system might hurt downstream navigation while enhancing upstream recreational opportunities.

166. In August of 2001 the COE released the "Missouri River Master Water Control Manual: Revised Draft Environmental Impact Statement (DEIS)." Within this document was an analysis of the estimated total net economic development (NED) benefits associated with all of the alternative water control plans contained in the DEIS. Four of the alternatives (all calling for modified releases at Gavins Point Dam) conform, to varying degrees, to the reasonable and prudent alternative contained in the final 2000 Biological Opinion on river operations. The COE analysis considered how these alternatives would impact economic benefits associated with navigation, recreation, flood control, water supply, and hydropower. The analysis found that all four of the alternatives having some consistency (or containing some of the beneficial actions consistent) with the recommendations in the Biological Opinion would provide a net increase in total net benefits over those anticipated under the current water control plan. This estimated increase in benefits ranged from four million to 16 million dollars per year, depending on the assumptions used and alternatives analyzed.[39]

167. As in the case of consultation costs associated with the piping plover, the finding of this analysis is that a large majority of any future project modification or mitigation costs, or benefits, associated with projects potentially impacting the plover will be due to the provisions of the Act regarding the listing of the plover, rather than designation of critical habitat for the species. For example, the multi-species Missouri River system-wide consultation involving the plover was completed in 2000, before designation of plover critical habitat. Any costs or benefits associated with modifications of river or

[38] Personal Communication, Wildlife Biologist, USFWS, Billings Field Office. October 3, 2001.

[39] Table 7.13-1, "Missouri River Master Water Control Manual: Revised Draft Environmental Impact Statement." U.S. Army Corps of Engineers, Omaha, NE.

reservoir operations recommended by the Service to protect the species is, therefore, due to the listed status of the species, rather than designation of critical habitat.

168. One potential source of plover-related costs for project operators is that of mitigation actions contained within original project proposals designed to address Service concerns associated with listed species. These mitigation actions may be included in original proposals in an effort to avoid additional modification or mitigation recommendations by the Service. In some cases the modifications or mitigation actions contained in the project proposal might be sufficient for species or habitat protection, and therefore the Service would not recommend any additional protective measures. In any case, costs associated with these "proposal-level" modifications represent real costs to project operators. The extent to which such costs are incurred in the case of projects within the proposed piping plover critical habitat area is unknown.

3.8 Potential Benefits of Proposed Critical Habitat

169. The first step in determining the marginal benefits of critical habitat designation is to identify the categories of user benefits that might be enhanced as a result of a proposed critical habitat designation.

170. The primary goal of listing a species as endangered is to preserve the species from extinction. However, various economic benefits, measured in terms of regional economic performance and enhanced national social welfare, result from species preservation as well. Regional economic benefits can be expressed in terms of jobs created, regional sector revenues, and overall economic activity. For example, the presence of a species may result in a successful local eco-tourism operation. National social welfare values reflect both use and non-use (i.e., existence) values, and can reflect various categories of value. For example, use values might include the opportunity to see a plover, or the recreational use of habitat area preserved as a result of the plover. Existence values are not derived from direct use of the species, but instead reflect the satisfaction and utility people derive from the knowledge that a species exists.

171. By protecting plover habitat, ecological functions provided by these habitats are also protected or enhanced such as nutrient flows, flood capacity (of a natural river or wetland system compared to a channelized river), and the level and stability of water flows or groundwater levels.

172. While the benefits of protection of the piping plover under the Act may be wide-reaching and involve recreational use benefits, tourism, existence values, ecological services, and other ancillary benefits, no systematic economic assessment of these benefits is currently available. However there is an extensive economics literature concerning the measurement of these benefits. For example, several water-based

recreational use values in Montana are reported in Duffield and Patterson (1991). Literature reviews of work throughout the U.S. on all types of outdoor recreation values include Walsh, Johnson and McKean (1990) and Markowski et al. (2001). Examples of existence values for wild species include the Boyle and Bishop (1987) study of bald eagles in Wisconsin, the Bowker and Stoll (1988) study of whooping cranes in Texas, and the Duffield and Neher (1996) study of wolves in Yellowstone NP. Loomis (1987) estimated the existence values for protection of the Mono Lake area in California. This literature very generally indicates that the economic benefits associated with protection of the piping plover and its habitat are likely to be positive and possibly substantial. Estimating such benefits is beyond the scope of this report.

173. While designation of critical habitat would provide a minor increase in oversight of the plover and its habitat, benefits associated with species protection can be attributed to critical habitat only to the extent that critical habitat is expected to result in additional consultations and project modifications, above those required due to listing. In the case of the northern Great Plains breeding population of the piping plover, it is estimated that critical habitat will lead to few additional consultations or project modifications. Therefore, it is expected that critical habitat designation for the plover will lead to minimal economic benefits relative to the benefits associated with baseline listing of the species.

3.9 Additional Impacts Due to Critical Habitat

3.9.1 Potential Impacts on Small Businesses

174. Under the Regulatory Flexibility Act (as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996) whenever a Federal agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions).[40] However, no regulatory flexibility analysis is required if the head of an agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. SBREFA amended the Regulatory Flexibility Act to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities. This section addresses the potential impacts to small entities and communities located within the proposed critical habitat designation.

175. This rule is not expected to have a significant economic impact on a substantial number of small entities because it imposes very little, if any, additional impacts on land use beyond those that may be required

[40] 5 U.S.C. 601 et seq.

as a result of the listing of the piping plover. Because the piping plover is a Federally protected species, landowners prohibited from taking the species, which is defined under the Act to include such activities that would harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. As a result, any future consultations with the Service are likely to occur to avoid an incidental take of the piping plover. Therefore, proposed modifications to such activities recommended by the Service would be attributable to the presence of the piping plover on a landowner's property and not due to the presence of critical habitat.

3.9.2 Environmental Justice Concerns

176. Executive Order 12898 states that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

177. To determine whether the designation of critical habitat imposes a disproportionate burden on minority or low income populations, three aspects need to be considered: (1) the methodology used to designate critical habitat, (2) the demographics of the counties containing designated land and (3) the costs incurred due to the designation.

178. The finding of this Economic Analysis is that designation of critical habitat for the piping plover in the states of Montana, North Dakota, South Dakota, and Nebraska will lead to few increased consultation requirements or associated costs. In the absence of significant costs associated with the ruling, no environmental justice concerns exist.

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APPENDIX A:

DESCRIPTION OF CRITICAL HABITAT UNITS IN PROPOSED RULE

Lands proposed as critical habitat are divided into 16 critical habitat units containing the primary constituent elements for the Northern Great Plains population of piping plovers. A brief description of each piping plover critical habitat unit is provided below.

Minnesota

Unit MN-1 - Rocky Point, Pine and Curry Island, and Morris Point
Unit MN-1 includes approximately 235.2 acres of land in Lake of the Woods County. Approximately 100.4 acres are designated (40.6 ha) within the 697-acre (282.3 ha) Rocky Point Wildlife Management Area, which is in public ownership, managed by the Minnesota Department of Natural Resources. Rocky Point is located just east of Arneson on Lake of the Woods. Unit MN-1 also includes approximately 134.8 acres (54.5 ha) within the Pine and Curry Island Scientific and Natural Area which is in public ownership, managed by the Minnesota Department of Natural Resources. Pine and Curry Island Scientific and Natural Area includes approximately 112.6 acres (45.6 ha) of a sandy barrier island (Pine and Curry Island) and 22.2 acres (8.9 ha) of an adjacent peninsula (Morris Point) located at the mouth of the Rainy River on Lake of the Woods.

Montana

Unit MT-1: Sheridan County
This unit includes approximately 19,445.7 acres (7,869.5 ha) of 21 alkali lakes and wetlands in Sheridan County, located in the extreme northeast corner of Montana. Approximately 5,793.7 acres (2,344.7 ha) are in private ownership and 13,651.9 acres (5524.8 ha) are in public ownership. Of the lands in public ownership, 13,356.8 acres (5,405.4 ha) are in Federal ownership and 295.1 acres (119.4 ha) are in State ownership. Federal lands designated include piping plover populations on Medicine Lake National Wildlife Refuge and several Waterfowl Production Areas, both owned and managed by the Service. State lands designated include land owned and managed by the Montana Department of Natural Resources and Conservation.

Unit MT-4: Nelson Reservoir and Bowdoin National Wildlife Refuge
This unit encompasses approximately 3,341.7 acres (1352.4 ha) within Nelson Reservoir and 3,294.5 acres (1333.3 ha) within Bowdoin National Wildlife Refuge. Both sites are located in east-central Phillips county, approximately 275 km west of the North Dakota border and 60 km south of Canada. Bowdoin National Wildlife Refuge is in public ownership (Federal) and managed by the Service. Nelson Reservoir, a Bureau of Reclamation project, is an 1,845-ha irrigation reservoir approximately 4 km northeast of Bowdoin National Wildlife Refuge. Lake Bowdoin and Nelson Reservoir are offstream facilities receiving water from the Milk River.

Nebraska

Unit NE-1: Platte, Loup, and Niobrara River
This unit encompasses approximately 463 miles of river.

Niobrara River:
The Niobrara River is a tributary of the Missouri River, originating in Wyoming and flowing through the northern part of the Nebraska Sandhills region. The portion of the Niobrara included in the proposed Critical Habitat starts a short distance east of the Cherry-Brown County line, and extends downstream approximately 129 miles to its confluence with the Missouri River at the Niobrara State Park.

In 1991, the National Parks Service designated 76 miles of the Niobrara River as a "National Scenic River," 50 miles of which are included in the proposed Critical Habitat designation. The National Scenic River reach ends where Hwy. 137 crosses the river. The Nature Conservancy owns and manages 9.5 miles along the Niobrara River which falls within both the National Scenic River reach and the proposed piping plover Critical Habitat. Other ownership and interests are principally private.

Loup River:
The Loup River flows 68 miles to its confluence with the Platte River near Columbus. Ownership interests within this reach of proposed Critical Habitat are primarily private.

Platte River:
The North and South Platte rivers each originate in the Rocky Mountains of Colorado with snow melt, and flow east into Nebraska where they join forming the Platte River near the town of North Platte. The reach included in the proposed piping plover Critical Habitat begins near the town of Cozad and extends to its confluence with the Missouri River 266 miles downstream. Ownership is primarily private, including 28.5 miles which is managed as conservation land by The Nature Conservancy, Platte River Whooping Crane Habitat Maintenance Trust, Central Nebraska Public Power and Irrigation District, Nebraska Public Power District, and the National Audubon Society's Lillian Annette Rowe Sanctuary. The State of Nebraska owns 8 miles along the Platte River, which is primarily under the jurisdiction of the Nebraska Game and Parks Commission.

North Dakota

Unit ND-1:
This unit encompasses approximately 7,480.3 acres (3,027.2 ha) of 13 alkali lakes and wetlands in Divide and Williams Counties, located in the extreme northwestern corner of North Dakota. Approximately 1,765.4 acres (714.4 ha) are in public ownership and 5,715 acres (2,312.8 ha) are in private ownership. Of the lands

in public ownership 1,338 acres (541.5 ha) are in Federal ownership (Waterfowl Production Areas managed by the Service) and 427.3 acres (172.9 ha) are in State ownership. State lands designated include 3.1 acres (1.3 ha) of Wildlife Management Areas owned and managed by the North Dakota Game and Fish Department and 424.2 acres (171.7 ha) of school lands owned and managed by the North Dakota Land Department.

Unit ND-2:
This unit encompasses approximately 23,147.1 acres (9,367.5 ha) of 24 alkali lakes and wetlands in Burke, Renville, Mountrail, and Ward Counties, located in northwestern North Dakota. Approximately 14,541.2 acres (5,884.7 ha) are in public ownership and 8,605.9 acres (3,482.8 ha) are in private ownership. Of the lands in public ownership, 13,806.3 acres (5,587.3 ha) are in Federal ownership and 734.9 acres (297.4 ha) are in State ownership. Federal lands designated include Lostwood and Upper Souris National Wildlife Refuges and on Waterfowl Productions Areas, both owned and managed by the Service. State lands designated include 320.4 acres (129.7 ha) of Wildlife Management Areas owned and managed by the North Dakota Game and Fish Department and 414.5 acres (167.7 ha) of school lands owned and managed by the North Dakota Land Department.

Unit ND-3:
This unit encompasses approximately 5,519.6 acres (2,233.8 ha) of 9 alkali lakes and wetlands in McLean County located in north-central North Dakota. Approximately 1,339.3 acres (542.1 ha) are in public ownership and 4,180.3 acres (1,691.7 ha) are in private ownership. Of the lands in public ownership, 798.8 acres (323.3 ha) are in Federal ownership (Waterfowl Production Areas managed by the Service) and 540.5 acres (218.8 ha) are in State ownership. State lands designated include 435.6 acres (176.3 ha) of Wildlife Management Areas owned and managed by the North Dakota Game and Fish Department and 105 acres (42.5 ha) of school lands owned and managed by the North Dakota Land Department. The John E. Williams Preserve, owned and managed by The Nature Conservancy (private), is also included in this unit.

Unit ND-4:
This unit encompasses approximately 12,031.3 acres (4,869 ha) of 24 alkali lakes and wetlands in McHenry, Pierce, Benson, and Sheridan Counties, located in north-central North Dakota. Approximately 1,563.1 acres (632.6 ha) are in public ownership and 10,468.2 acres (ha) are in private ownership. Of the lands in public ownership, 1,098.6 acres (444.6 ha) are in Federal ownership (Waterfowl Production Areas managed by the Service) and 464.5 acres (188 ha) are in State ownership. State lands designated include 370.4 acres (149.9 ha) of Wildlife Management Area owned and managed by the North Dakota Game and Fish Department and 94.1 acres (38.1 ha) of school lands owned and managed by the North Dakota Land Department.

Unit ND-5:
This unit encompasses approximately 1,351.4 acres (546.9 ha) of one alkali lake in Eddy County, located in northeastern North Dakota. Approximately 13.4 acres (5.4 ha) are in public ownership and 1,337.9 acres

(541.5 ha) are in private ownership. Of the lands in public ownership, 6.9 acres (2.8 ha) are in Federal ownership (Waterfowl Production Areas managed by the Service) and 6.5 acres (2.6 ha) are in State ownership (Wildlife Management Area owned and managed by the North Dakota Game and Fish Department).

Unit ND-6:
This unit encompasses approximately 40,221.1 acres (16,277.3 ha) of 24 alkali lakes and wetlands in Sheridan, Burleigh, Kidder, and Stutsman Counties, located in south-central North Dakota. Approximately 24,231.4 acres (9,806.3 ha) are in public ownership and 15,989.7 acres (6,470.9 ha) are in private ownership. Of the lands in public ownership, 22,269.2 acres (9,012.2 ha) are in Federal ownership and 1,962.2 acres (794.1 ha) are in State ownership. Federal lands designated include Long Lake, Chase Lake, and Arrowwood National Wildlife Refuges and on Waterfowl Production Areas, all owned and managed by the Service. State lands designated include 1,297.8 acres (525.2 ha) of Wildlife Management Areas owned and managed by the North Dakota Game and Fish Department and 664.4 acres (268.9 ha) of school lands owned and managed by the North Dakota Land Department.

Unit ND-7:
This unit encompasses approximately 3,192.6 acres (1,292.1 ha) of 9 alkali lakes and wetlands in Emmons, Logan, and McIntosh Counties, located in south-central North Dakota. Approximately 812.5 acres (328.9 ha) are in public ownership and 2,380.1 acres (963.2 ha) are in private ownership. Of the lands in public ownership, 536.6 acres (217.2 ha) are in Federal ownership (Waterfowl Production Areas managed by the Service) and 276 acres (111.7 ha) are in State ownership. State lands designated include 236.3 acres (95.6 ha) of Wildlife Management Areas owned and managed by the North Dakota Game and Fish Department and 39.7 acres (16.1 ha) of school lands owned and managed by the North Dakota Land Department.

***Missouri River Units*:**
Missouri River units are comprised of riverine and reservoir (Fort Peck Lake, Lake Sakakawea and Lake Audubon, Lake Francis Case, and Lewis and Clark Lake) reaches. All of the reservoirs except Lake Audubon are mainstem impoundments, constructed by dams, and regulated by the U.S. Army Corps of Engineers. Lake Audubon is a sub-impoundment of Lake Sakakawea and is regulated by the Bureau of Reclamation through operation of the Snake Creek Pumping Plant. Piping plover habitat within reservoir reaches is composed of shorelines and islands, below the top of the flood pool and is owned by the Federal government. Piping plover habitat within riverine reaches consists of inter-channel islands and sandbars and ownership varies by State. In Montana, North Dakota, and South Dakota islands and sandbars are owned by the State. In Nebraska, these lands are owned by the adjacent landowner.

Montana

Unit MT-2: Fort Peck Reservoir
This unit encompasses approximately 77,370 acres (31,311 ha) of Fort Peck Reservoir, located entirely within the Charles M. Russell National Wildlife Refuge which is in Federal ownership, managed by the Service. Fort Belknap Indian Community lands are adjacent to Fort Peck Reservoir.

Unit MT-3:
This unit encompasses approximately 125.4 miles of the Missouri River from just west of Wolf Point to the Montana/North Dakota border. The Missouri River flows through the reservation lands, of the Assinboine and Sioux Tribes of Fort Peck, and privately owned land.

North Dakota

Unit ND-8:
This unit encompasses approximately 354.6 river miles from the Montana/North Dakota border to the North Dakota/South Dakota border. Lake Sakakawea, Lake Audubon, and Lake Oahe are included in this unit, along with a free-flowing stretch of the Missouri River from river mile 1389 to 1302 (Garrison Reach). The North Dakota Game and Fish Department manages the north half of Audubon Reservoir and the Service manages the south half of Audubon Reservoir. The Missouri River and associated reservoirs are adjacent to reservation lands of the Three Affiliated Tribes of Fort Berthold and Standing Rock Sioux Tribe and privately owned land.

South Dakota

Unit SD-1:
This unit encompasses approximately 162.4 river miles in two sections: the North Dakota/South Dakota border to river mile 1072.3, just north of Oahe Dam (Oahe Reservoir); and RM 987.5, just south of Big Bend Dam to RM 984.8 (part of Francis Case Reservoir). The Missouri River and associated reservoirs are adjacent to reservation lands of the Cheyenne River Sioux Tribe and privately owned land.

Unit SD-2:
This unit encompasses approximately 232.6 river miles from river mile 984.8, north of Chamberlain, South Dakota to river mile 752.2 near Ponca, Nebraska. Two mainstem Missouri River reservoirs, Lake Francis Case and Lewis and Clark Lake, and two riverine reaches (Fort Randall and Gavins Point) are included in this unit. Approximately 120 miles are shared between South Dakota and Nebraska. The Missouri River and associated reservoirs are adjacent to reservation lands of Lower Brule Sioux Tribe, Rosebud Sioux Tribe, Ponca Tribe of Nebraska, Winnebago Tribe of Nebraska, Santee Sioux Tribe of Nebraska, Crow Creek Sioux Tribe, and Yankton Sioux Tribe and privately owned land.